Dental Digest

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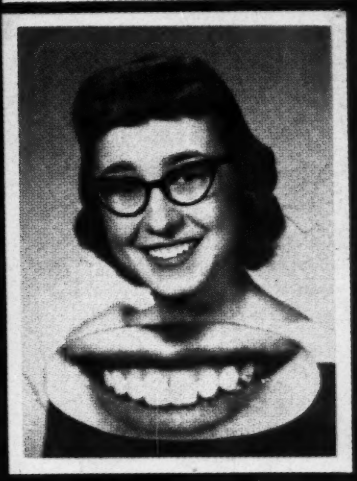

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June 1959

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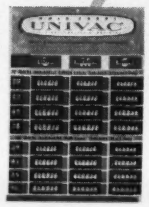

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Vol. 65, No. 6

Dental Digest

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JUNE 1959

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The magazine is mailed on the fifteenth of the month of issue.

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Bleaching Excessively FLUOROSED *Anterior Teeth*

H. S. SUSMAN, B.S., D.D.S., Omaha, Nebraska

DIGEST

In cases of fluorosis where tooth structure is apparently sound and the penetration of the brown stain across the surface of the teeth is superficial enough, it is possible to bleach out the brown-in (the term suggested by G. V. Black) in several half-hour visits with the cautious use of Superoxol®, (30 per cent H_2O_2) without recourse to porcelain jacket crowns. This article presents the step-by-step procedure used in such a case.

Case History

The patient in this case was a young woman nineteen years of age. Across the middle of her upper centrals a band of deep brown stain dipped down slightly in an arc toward the incisal third of her upper laterals. This dental disfigurement probably occurred in her earliest years from drinking water with an overabundance of fluorine salts. Except for a couple of small amalgam restorations, however, the patient was virtually caries free, evidence of an adequate diet and of the efficacy of fluorine as a caries preventive agent. When the patient was seen she was resigned, for esthetic reasons, to having the four perfect but discolored upper incisors prepared for porcelain jacket crowns.

Recommendation

After a thorough examination, bleaching was suggested, using 30 per cent hydrogen peroxide (Superoxol®). The following technique was employed.

Preparatory Measures

1. All the teeth that were to be isolated by the rubber dam from the upper left first bicuspid to the upper right first bicuspid were first polished with Triple X Silex.

2. The mouth was rinsed and a piece of thin rubber dam material (6 inches by 6 inches) was placed over the open mouth, and the middle of each incisal and occlusal point was marked with a sharp eyebrow pencil.

3. The smallest holes were punched out through these marks, and tincture of green soap was used as a lubricant (and gum protective agent) to aid in the passage of the teeth through the holes.

4. Rubber dam clamps were placed on each of the upper first bicuspids and the standard type of rubber dam holder was used.

5. By everting the rubber dam with an explorer about the gingivals of the teeth, a dry field of operation was effected so that there could be no seepage of saliva or bleaching agent about the necks of the teeth.

Teeth Completely Isolated—As a precautionary measure against the strong chemical used, the saliva ejector, instead of passing through a hole in the dam, was placed under it to rest in the floor of the mouth. Since the stains were in the lower half of the upper incisors, it was unnecessary to ligate the teeth. It was absolutely essential that the teeth being treated were completely isolated to avoid severe tissue burns from the Superoxol.

Face Protected—Extreme care was exercised at all times to avoid any contact with the liquid or its fumes. The patient's eyes, cheeks, nose, and forehead were completely covered

1.
The patient before treatment.

2.
The patient after treatment. Note appearance of bleached teeth.

with a doubled linen towel during each treatment after the rubber dam was applied. Rubber finger cots on the thumb, index, and middle fingers were used to protect the operator's fingers.

Procedure

1. A clean glass tube was dipped into the bottle of 30 per cent hydrogen peroxide (Superoxol). Enough was removed to allow for 6 to 8 drops in a dappen dish.
2. The teeth to be treated were dried with warm air.
3. A small cotton pellet was dipped into the solution using stainless steel cotton pliers.
4. One at a time each stained tooth surface was moistened with the drug which was "ironed out" with a red hot sickle-shaped stainless steel explorer. This action caused a miniature explosion of steaming H_2O_2 which concentrated the bleaching action into the stained sites. An alcohol lamp furnished sufficient heat for the explorer.
5. This procedure was repeated for 8 minutes on each stained tooth every other day.

Progressive Improvement

When the patient returned for her fourth treatment there was marked improvement. The stain had faded into a light yellow color. At the end of the sixth treatment all stain had been eradicated; however, a seventh treatment was given for added thoroughness. Upon examination with a high powered lens there was no discernible damage to any of the tooth structures. The patient did not complain of discomfort during or after treatments.

Results Satisfactory

The psychologic effect of the tooth-bleaching treatment was dramatic. Because of improved esthetic appearance the patient was able to make a more rewarding adjustment to life.

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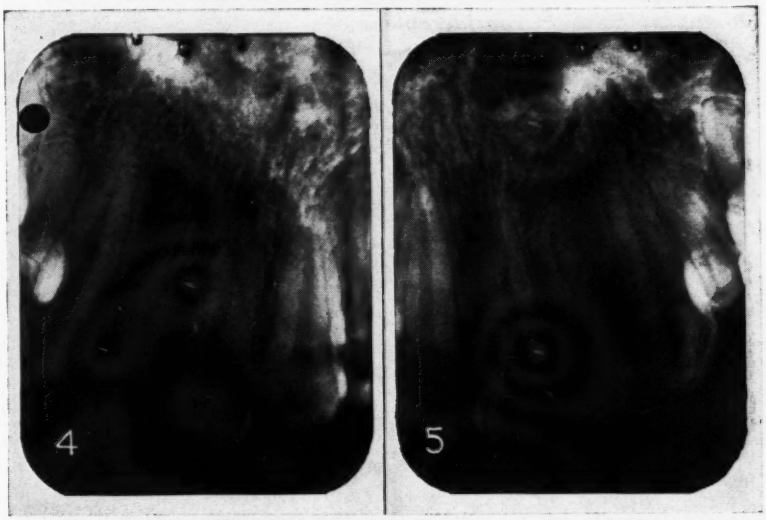
3.
Preparation of the patient for treatment.



4. and 5.
Periapical x-rays showing upper incisors after final treatment.

Fundamentals of Practical ARTICULATION

HARRY L. PAGE, Valparaiso, Indiana

DIGEST

The jaws are the final articulator but it is impossible to use them as such. A mechanical duplicator of function is therefore essential. The Gnathological Society advanced sound principles for such duplication in 1926, but since then methods of application and the equipment used have been so complicated that considerable doubt and indifference have resulted. This article tells how to avoid these complications in technique and, by applying the original principles with direct methods, produce a superior result in a fraction of the time usually required.

The Problem of Articulation

The conviction that mechanical duplication of jaw function is the only way to solve the articulation problem is becoming widespread. However, the methods and instruments used in execution of the procedure have been intricate and cumbersome. It is frequently believed that no simpler means can be devised or will succeed. The complicated approach does produce a result suggesting that the direction to success has been indicated, even though the correct implement is not being employed.

Problem a Challenge—Harris[1] stated, "The challenge to dentistry, as I see it, is to so simplify the technique, without sacrificing any fundamentals, as to make it practical for all dentists."

[1]Harris, Elam: Readers' Round Table, J. Pros. D. 8:549 (May) 1958.

Theories Become Practice—Not only have these new functional theories won the confidence of dentists, but also Harris's challenge has been met. Science has reduced to a workable method the procedure[2] that was once quoted as being ". . . a long, tedious, difficult and not practical technique," although "the fundamentals are . . . correct . . ."

Principles

There are four major principles underlying functional articulation:

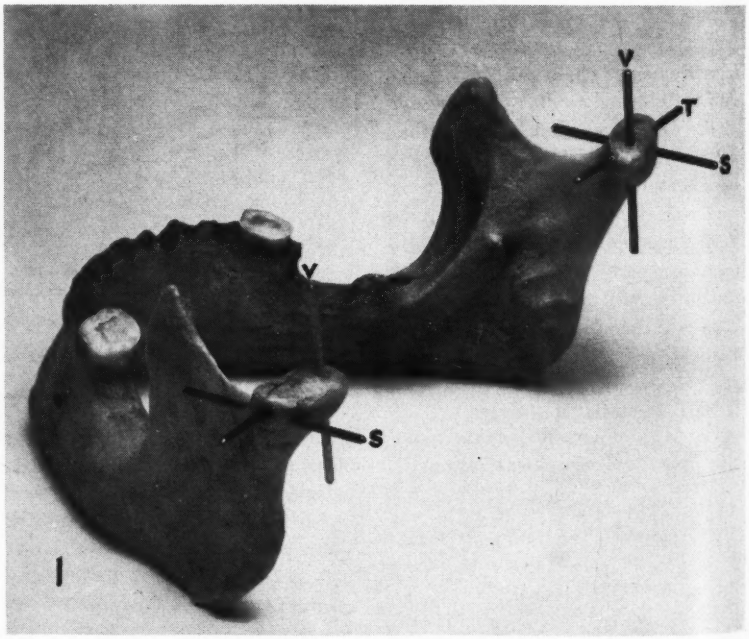
1. The temporomandibular joint rotational center; the hinge-axis.
2. The cranial reference plane.
3. The collateral, bodily shift of the mandible in function; the so-called "Bennett movement."
4. The envelope of motion.

"Not practical" techniques cannot be blamed upon the principles but upon improper interpretation and application of these principles. New principles should suggest appropriate methods and instruments no matter how strange they may seem. On the contrary familiar types of procedures and equipment have been retained. Complications and failures have therefore resulted.

[2]Ibid.

Fallacies of Hinge-Axes Concept

Clinging to the familiar has pro-



1.
Intrafossal, nonintersecting hinge-axes passing through condyles (schematic). T—transverse axes control closing jaw rotation; V—verticle axes control lateral jaw rotation; S—sagittal axes control rocking jaw rotation.

longed a belief that a hinge-axis in the articulator must correspond to a theoretic line passing through the head from and to some point in each condyle. These points would have to be formed when and where the three jaw axes (transverse, vertical, and sagittal) met at a common intersection in the condyle. The fallacy in this reasoning is disclosed by ordinary mechanics.

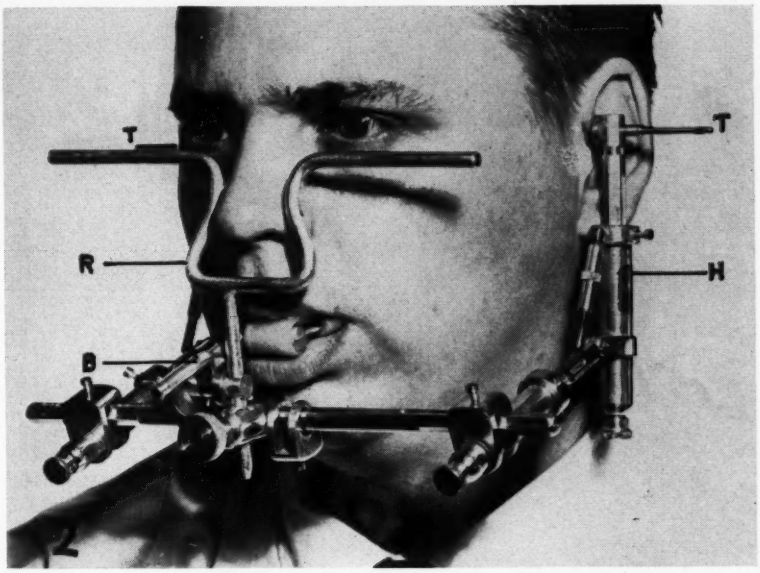
Condyle an Irregular Body—Only a perfect sphere has a common intersection of axes forming a point around which three dimensional rotation takes place; a ball bearing, for example. But, a condyle is a highly irregular body. Axes of irregular bodies never meet (Fig. 1). Therefore, there can be no *point* in each condyle from and to which the conventional single intercondylar axis can be run. Even if there were such a point in each condyle, the intercondylar axis theory would still be a fallacy.

An Axis is a Line—When the wheel entered primitive science, it was obvious that an axis was a *line* running perpendicular to the path or plane of rotation it controlled. The pioneers of the hinge-axis concept, the Gnathological Society of California, proved that transverse axes (axes controlling opening and closing rotation) are never symmetrically positioned in the two joints. By definition, both transverse axes, being asymmetrically positioned lines perpendicular to the same plane, are parallel to one another and *parallel lines never meet.*

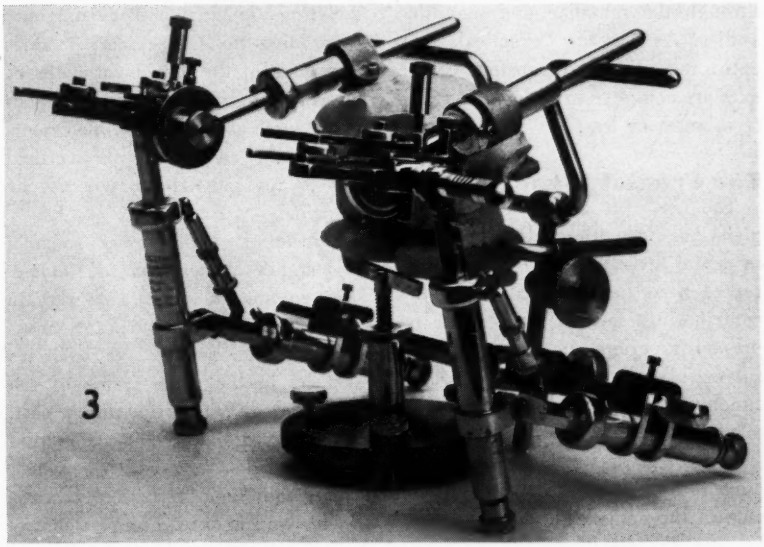
Questions Posed—Advocates of the single, intercondylar axis must answer other questions: (1) If there *are* rotational points in each condyle, how can they be located by a one-dimensional recording instrument such as a hinge bow? (2) How can an *oblique* line through the head be perpendicular to the path of jaw opening and closing? (3) Regardless of the method used to transfer symmetrically positioned parallel transverse axes to an intercondylar instrument, how can their parallelism be maintained?

Duplication of Two Axal Centers Possible—Recognizing the fallacy of the intercondylar axis, an articulator (Transograph) has been designed that duplicates perfectly the two *intra*-fossal transverse line or axal centers of rotation in the joints. Since bearing control along any appreciable segment of a right line automatically controls that line even into infinity, common mechanics suggested the duplication of this dual or "split axis" control.

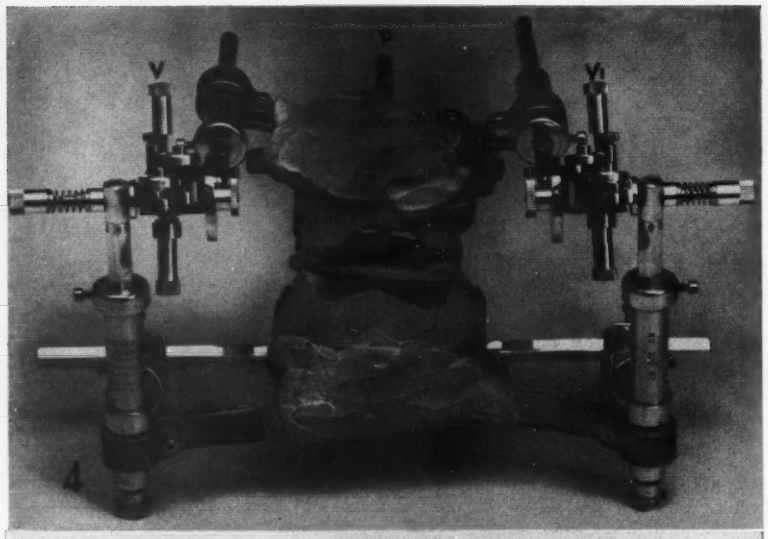
Procedure Uncomplicated—As is shown in Figures 2 and 3, it was merely necessary to use pin and sleeve construction with the joints having an offset connection through



2.
Transverse axes indicator pins (T) zeroed on temporomandibular joint transverse axes and relation to occlusion on bite fork (B) and to head relator (R) by means of hinge bow (H). Offset connection between axes lies at subject's occlusals.



3.
Pin and sleeve bearings replace axes indicator pins in hinge-bow. Offset connection of axes at subject's occlusals reproduced by upper cast.



4.
Occlusal plane oriented to joint axes. Center rod (P) replaces head relator to form anterior apex of cranial plan (P, V, V_1).

the casts in the same manner that the jaws have an offset connection through the maxillae and mandible bodies. As for the "practical," the entire recording and transfer of these axes are completed routinely in twenty minutes or less.

The Cranial Plane

The need for a cranial reference plane has been frequently mentioned in dental literature[3,4,5,6,7,8]. Only one aspect need be discussed here; the contributing factors that must be present if a cranial plane is to operate successfully. The common method of attaching an "axis-orbital indicator" to a standard face-bow is worthless.

Purpose of a Cranial Plane—The purpose of a cranial plane is to provide in the articulator an angulation between the *working* joint's vertical axis (axis controlling lateral jaw rotation) and the maxillary occlusal plane that will be identical with the corresponding angle in the subject's head. Otherwise, except for an undeviating opening and closing arc (something no subject can or does do), none of the movement paths of the lower teeth in the articulator can be the same as actual jaw movements because the radii from the vertical axes to any given tooth will not be the same.

Correlation Between the Vertical Axes and Maxillary Occlusal Plane—This angulation must also remain constant during all articulator movements. To do so, the vertical axes must be in the same frame of the articulator as is the maxillary cast. If not, any attempt to use a cranial or so-called "axis-orbital plane," while it may *look* impressive, is wasted time and energy. Figure 4 shows a proper correlation between the vertical axes and the maxillary occlusal plane.

Control of Jaw Rocking—A factor of the greatest importance to the value of the cranial plane is that of accurate duplication in the articulator of the head distance between the two sagittal axes and the subject's median line. The sagittal axes control jaw rotation in the transverse plane (jaw rocking).

Methods to Transfer Interaxis Direction—Two methods are now used to record and transfer these interaxis distances and direction.

1. In esoteric techniques radia-protrusive jaw movements are used to scribe either dual gothic arch or multiple pantographic tracings. Etched upon glass plates, these tracings are transferred from the head to corresponding positions in the articulator and an attempt is made to adjust the vertical and sagittal instrument axes so that jaw laterals and rocking will follow the same paths as in the head.

Procedure Cubersome: This procedure not only involves taking difficult and highly questionable jaw recordings and endless trial and error setting and resetting of articulator controls but also requires laborious, arbitrary grinding of auxilliary controls in an attempt to incorporate the supposed condyle and Bennett paths.

Conventional Instruments Operate Around Point Controls: Despite meticulous attention to details and many hours spent in trying to adjust the articulator to follow head tracings, there is no possibility of succeeding because the instruments to which the tracings are transferred are of conventional design, operating around *point* controls. Once more, *temporomandibular joints do not revolve on point centers. Accurate* instrument adjustment to *any* type of jaw records is impossible under these handicaps.

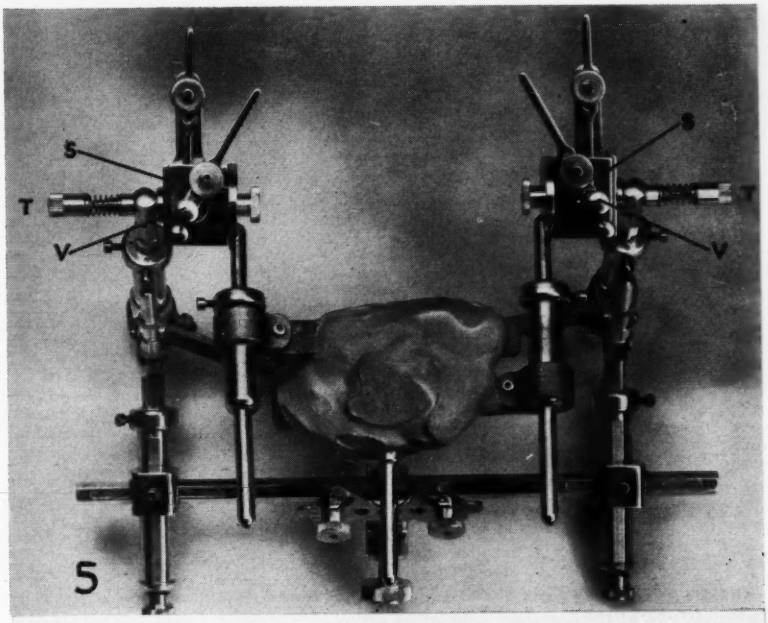
2. The other method of adjusting articulator vertical and sagittal axes is accurate and far simpler. By using radial lateral wax bites, independent vertical axes and their bearings are readily adjusted to and locked by suitable mechanisms in positions that will accept other laterals at various combined right, left, and jaw-opening positions. When one instantaneous vertical and saggital axis setting accepts bites at three different, combined lateral and vertical jaw positions, it is evident that the vertical and sagittal axes are correctly combined with the transverse axes. Control of three out-of-line points on a sphere means control of *all points* on the sphere.

Time-Saving Procedure — Practical considerations, too, have been served; thirty minutes is ample time

---

[3]McCollum, Beverly, B.: A Research Report, Dental Items Interest, reprint 1941, p. 23-27.
[4]Page, Harry L.: Maxillomandibular Terminal Relationships, DENTAL DIGEST **57**:492 (Nov.) 1951.
[5]Schweitzer, Jerome M.: Transograph and Transographic Articulation, J. Pros. D. **7**:617-619 (Sept.) 1957.
[6]Page, Harry L.: The Cranial Plane, DENTAL DIGEST **61**:152-157 (April) 1955.
[7]Hoffman, Edward J.: Crown and Bridge Articulation on the Transograph, J. Pros. D. **8**:295 (Mar.) 1958.
[8]Hildebrand, G. Y.: Studies in the Masticatory Movements of the Human Lower Jaw, Scand. Arch. F. Physio. Supp. 61 (1931).

for vertical and sagittal axis records, transfers, and settings. Figure 5 shows the articulator mounted and ready to operate with correct, nonintersecting transverse, vertical, and sagittal axes locked in position.



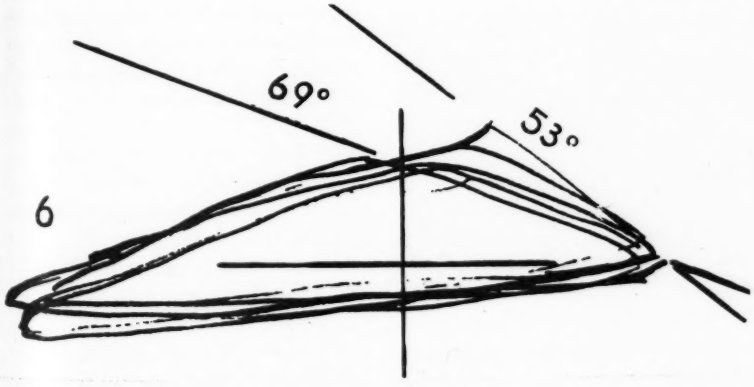
5.
Articulator with all axes locked in nonintersecting positions. Correct for duplicating tridimensional function. Transverse axes (T), vertical axes (V), sagittal axes (S).

The Bennett Movement

The accepted theory is that the Bennett movement is a component of bruxomatic, horizontal, radial laterals. This idea is credited to Norman Bennett, yet his writings reveal no statement to that effect. On the contrary, Bennett's own statement on his well-known, often-quoted article, *A Contribution To the Study of The Movements of The Mandible,* is that his Figure 8 shows an off-sagittal drift of the jaw in simple opening; the *vertical* component of jaw function.

Collateral Shift Added—Vertical is the only jaw component using the axes of both joints simultaneously. With the joints asymmetrically placed in the head, the transverse axis in one joint lies at a different distance from the symphysis than its mate in the other joint. A knowledge of simple mechanics makes it clear that any unitary mechanism trying to rotate on asymmetrical axes, as does the jaw in vertical function, must add a collateral bodily shift or twist. The loosely encapsulated condyles can and do shift readily in their fossae. The Bennett movement is no more difficult to understand than that.

An Automatic Bennett Movement—Copying a Bennett movement requires that the transverse *intra*fossal *line* axes of the articulator be exactly as recorded by the jaw joints. By substituting pin and sleeve bearings for the axis indicator pins in the hinge-bow and by designing the hinge-bow to transform itself into a fully mounted, slightly flexible articulator, the Bennett movement is integrated automatically by the principles of mechanical equivalents. With every minute movement, the instrument, turning on its asymmetrical transverse bearings, produces a torque that has the same effect as the actual Bennett.



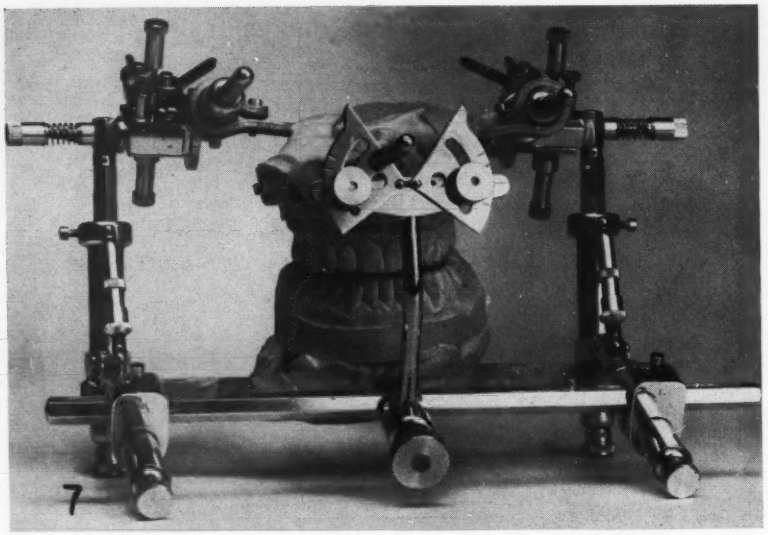
6.
Tracings of functional jaw pattern boundaries showing flattest (53°) and steepest (69°) closure angles (after Boswell).

The Envelope of Motion

An envelope of motion exists whenever a curve or surface while moving under a law or control (in this case, axal centers) maintains unbroken tangency with another curve or surface. With the Transograph already in possession of the jaw's rotational controls (axes) in all three dimensions, a means of providing unbroken tangency between upper and lower functional jaw movements need only be added.

Tangency Lost by Tooth Contact—The entire envelope cannot be used in articulating teeth. A complete envelope includes bruxism which is highly detrimental. Tooth contacts required by "balance" cause trauma. Furthermore, if just two teeth interfere or even touch, tangency of jaw movement is lost. For this reason, no tooth can be used to guide articulation or "protect" other teeth.

Attention was therefore directed to



7.
Transograph cams set for a functional jaw pattern and functioning along the left closing stroke of the terminal functional orbit.

the possibility of a *noninterfering functional jaw pattern lying inside the envelope of motion*. Such a pattern would be controlled by the same axes that control the full envelope; nothing would be changed except the amplitude of some movement components.

Existence of Functional Jaw Pattern Verified—A study of the literature, especially the works of Hildebrand[8] and Boswell[9], supplemented by experiments and prolonged clinical observation verified the existence of such a pattern. While no two subjects use the same pattern, nor does the same subject use a uniform pattern, there are almost universal *boundaries* to these patterns. Within these boundaries, well-articulated teeth never touch until they reach final and complete occlusion.

Articular Duplication in Instrument Design—This knowledge made it possible to incorporate an envelope of motion by means of this important component, the functional jaw pattern. With axes set in the Transograph the same as in the head and the flattest functional jaw pattern boundary being, for all practical purposes, uniform for all subjects; articulator duplication of essential function was reduced to appropriate instrument design.

Functional Pattern Visualized — Figure 6 shows the flattest functional jaw pattern limit (53° off the cranial plane) of one subject projected into the transverse plane.

Transograph Described—Figure 7 shows how the tangency at its flattest functional boundary is duplicated in the Transograph by means of a cam and cam follower mechanism: (1) The cams are attached to the instrument's lower frame. (2) The cam follower rod is part of the cranial plane that, being three staggered points, also represents the cranium itself, and is attached to the upper frame. (3) With the cams maintaining unbroken contact with the rod, cuspal heights and inclinations are so arranged that they do not touch as the two articulator frames and casts approach each other. (4) The teeth will, likewise, be free of functional interferences in the subject's mouth. (5) Cuspal heights will be normal, tips will be sharp, and inclines will be steep as nature intended them to be for efficiency. Postoperative adjustments will be unnecessary.

Conclusion

Complicated, "not practical" methods for functional articulation are obsolete. Raper[10] indicated a practical concept when he stated, "Discovery need not consist of finding something that is hidden. It may consist only in *seeing the significance* of something that is in plain view." The simple well-known methods described here are as sound as the principles themselves. Muff[11] states ". . . we have made comparative mountings . . . on various instruments and have found the Transograph more capable of duplicating functional movements."

104 *Garfield Avenue*

[8]Boswell, Jesse V.: Practical Occlusion in Relation to Complete Dentures, J. Pros. D. **1**:307-321 (May) 1951.
[10]Raper, Howard Riley: Man Against Pain, Prentice Hall, Inc., Ed. 2, (1945) p. 63.
[11]Muff, William O.: Reader's Round Table, J. Pros. D. **8**:551 (May) 1958.

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MANDIBULAR SEQUESTRATION

in Osteomyelitis

ROBERT ATTERBURY, B.S., D.D.S.,* Oak Park, Illinois

DIGEST

With the use of antibiotics and chemotherapy the incidence of osteomyelitis has been markedly reduced. If (A) the causative organism can be isolated and identified, and proper sensitivity tests made to the various antibiotic and chemotherapeutic drugs, and (B) if proper surgical intervention is instituted, the term osteomyelitis need not be dreaded as it was a few years ago. This article presents the diagnosis and treatment of a case of chronic osteomyelitis of undetermined duration.

Case Report

A well-developed white man, 60 years of age, was referred to the dentist by his family physician.

Present Symptoms—One week previously the patient had complained of severe pain which seemed to be located in the lower right molar area. Intraoral roentgenograms (Figs. 1 and 2) revealed no visible cause for the pain. The patient was therefore referred for oral surgical consultation and possible treatment.

Past Symptoms—The patient complained that periodic pain and fullness at the right side of the mandible had occurred periodically for more than one year.

Physical Examination—Extraoral examination revealed the following:

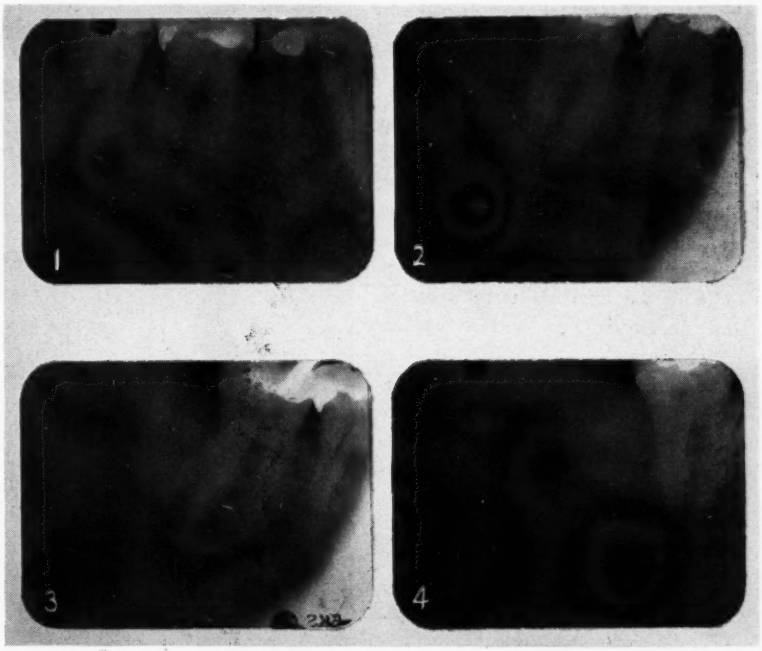
(1) Superficial right side cervical adenopathy.

(2) Intraorally, just buccal to the crest of the ridge in the right first molar area, there was a small opening from which purulent material was exuding. The area was slightly fluctuant.

(3) There was no tenderness over the missing third molar area. The patient could not recall having had this tooth removed. In other respects the mouth appeared to be normal and well kept.

Roentgenographic Examination—Intraoral roentgenographs (Figs. 3 and 4) were taken more posteriorly than the original accompanying roentgenograms. These revealed a circumscribed, radiopaque mass.

Lesion Revealed: On the basis of these findings, lateral and anteroposterior views were taken. These revealed a circumscribed cystic area involving the right mandible in the region of the angle. In this cystic area, there was a dense, somewhat ill-defined irregular lesion and it appeared to be separate from the ad-



1. and 2.
Intraoral roentgenograms taken to rule out apical and periapical disease. Note what appears to be a radiolucency.

3. and 4.
Intraoral roentgenograms taken posterior to the molar area revealing a circumscribed radiopaque mass.

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5.
Lateral view revealing a circumscribed cystic area involving the right mandible, in the region of the angle. In this cystic area, there is a dense somewhat ill-defined irregular mass which appears to be separate from the adjacent portion of the mandible.

jacent portion of the mandible. In addition the region of the alveolar ridge in this area appeared irregularly sclerotic

Possible Causes of Condition: The changes could be due to several possibilities, but an osteomyelitis with a retained sequestrum was a likely possibility. The possibility of a rudimentary third molar accompanied by some inflammatory process was also considered (Figs. 5 and 6).

Treatment and Course

Some purulent material was evacuated and a smear taken. The patient was instructed in the use of normal idiosaline hot solution to irrigate the mouth and codeine (1 grain) every four hours was prescribed for sedation and supportive therapy.

Laboratory Investigation

Hematologic analysis showed the following: Hemoglobin 15.1 per cent; erythrocytes 4,100,000, and white blood count 7,500. The bleeding time was two minutes and the coagulation time was four minutes. Results of serologic analyses were negative and urinalysis was within normal limits.

A culture of the smear taken revealed pneumococcus, micrococcus catarrhalis, and staphylococcus albus. The bacteria were all sensitive to Aureomycin®.

Surgery

The patient was put on Aureomycin 250 milligrams every six hours. The following steps were taken:

6.
Anteroposterior view showing relation of circumscribed cystic area with mass in center.

7.
Lateral roentgenograms of the mandible showing operative intervention.

1. Using local anesthesia, an incision was made over the crest of the ridge in the right mandible from the distal surface of the second bicuspid posteriorly to the retromolar area where the fistulous tract terminated.

2. The mucoperiosteum was reflected to expose cortical bone. A window was made to expose and view a mass of bone. This sequestrum was enucleated and a curet was used to clean out the fistulous tract and contents of the evacuated space.

3. The mucoperiosteal flap was replaced and sutured in position with interrupted silk sutures.

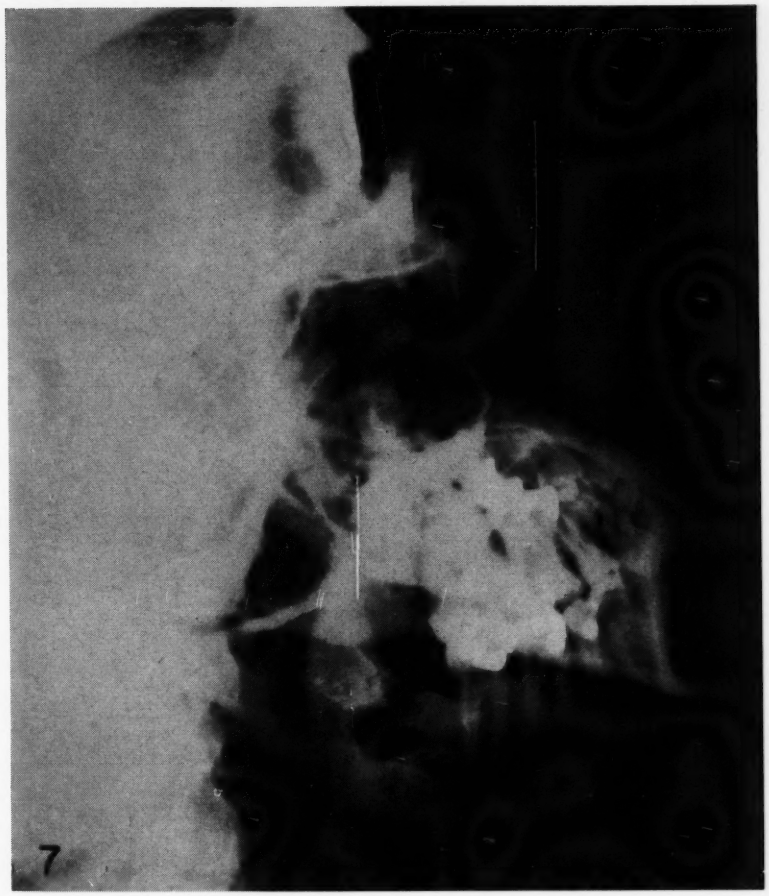
4. The patient was instructed to continue the use of Aureomycin and hot iodosaline mouthwashes. Empirin® compound with codein was prescribed for pain.

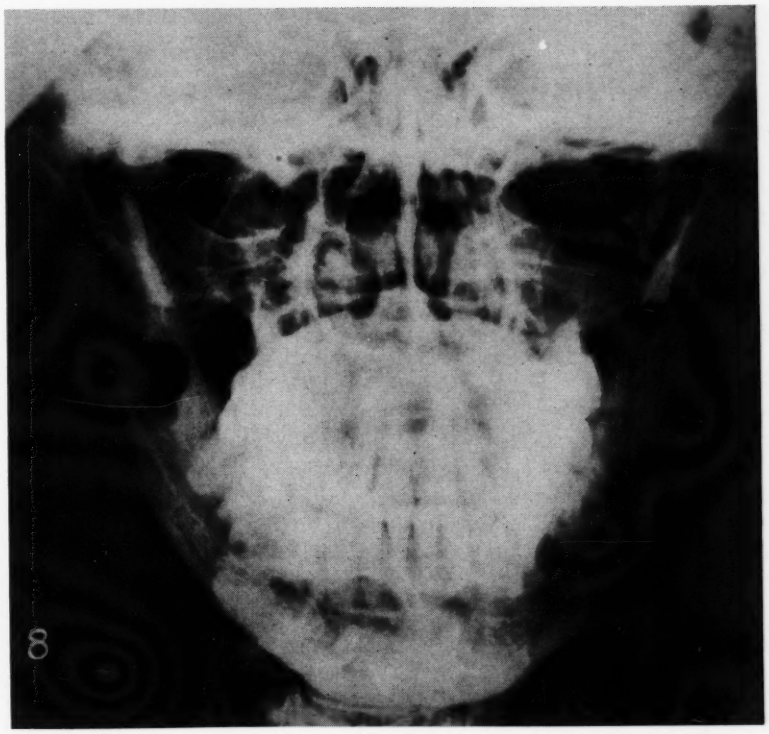
Biopsy Report

Description—The specimen consisted of two irregular pieces of greytan tissue, and a larger piece 1.3 by 0.9 by 0.5 centimeters containing bone. The smaller piece measured 0.3 centimeter in diameter.

Report—"Microscopic sections show tissue covered with stratified squamous epithelium. There is an opening in this leading to a tract lined with granulation tissue. There is marked inflammation above the wall. In this area of inflammation there are small pieces of degenerated bone. Sections show bony trabeculae, portions of which are destroyed and replaced by small, round cells and polynuclear leukocytes. Other areas show newly formed blood vessels, with adjacent round cells and fibroblasts. There is no evidence of malignancy."

Diagnosis—A chronic sinus tract, and degenerated bone (active chronic osteomyelitis).





8.
Anteroposterior view revealing defect in angle of right mandible from operative intervention.

Postoperative Course

Except for slight postsurgical edema, the patient had a normal postoperative period. The following medicaments were prescribed: Aureomycin, cold compresses, sedatives, fluids, and supportive therapy.

On the fifth postoperative day, the temperature was normal and all interrupted sutures were removed.

The patient was seen every other day. Two weeks after surgery roentgenogram examination revealed the previously described circumscribed bony mass to be absent (Figs. 7 and 8). The patient was regarded as cured with no need for further treatment.

Discussion

The normal hematologic picture suggests an infection of low virulence. The severe pain episodes prior to treatment were probably due to the advancing formation of the fistulous tract which had its origin from the mass forward to the first molar area.

Conclusion

A case is presented to indicate the treatment of chronic osteomyelitis.

This condition would have resulted in a serious disease if the organism had not been identified, and the proper antibiotic used in combination with surgical intervention. "Miracle" drugs are definitely useful, but their use must be combined with adequate drainage of pus and sequestrectomy.

1011 *Lake Street*

Five Years' Experience with Fluoridation in Norway, Maine

ALONZO H. GARCELON, D.D.S., Augusta, Maine

Purpose of Study

The study reported was designed to determine what effects fluoridation had on the permanent teeth of children six to fourteen years old who used the fluoridated water supply continuously for the first five years after fluoridation was started in Norway.

Method Used

The methods of investigation previously reported were also used in this study, except that water histories were taken to exclude all children whose homes were not served by the public water supply, who used water from another source for drinking purposes, or who lived elsewhere for more than three months after fluoridation started.

Results Obtained

Number Inspected—A total of 191 children, six to fourteen years of age, were inspected. Of these, 176 had one or more permanent teeth.

Children Six to Nine — Between 1952 and 1957 the average numbers of carious, missing, and filled permanent teeth were reduced by more than half among the children six to nine years of age, by more than a quarter among those ten to twelve years of age, and by about a tenth among those thirteen and fourteen years old.

Caries-free Permanent Teeth—During the same interval, the percentage of children six to nine years old who were entirely free of caries in permanent teeth more than doubled. Because of the small number examined in 1957, the difference in the percentage of caries-free children ten to twelve years of age is meaningless.

Rates Statistically Significant

Except as specifically noted, the differences in rates are all statistically significant. The difference in the caries rates could have occurred by chance alone *less than once in 10,000,000* random samples. The difference in the caries-free rates among the children six to nine years of age could have occurred by chance alone about once in 5000 random samples.

Benefits Positive

Children six to fourteen years old who used the fluoridated water supply continuously after fluoridation was started in Norway, Maine, received significant benefits from the first five years' fluoridation, even though some of them had many of their permanent teeth erupted before fluoridation began.

Younger Children Receive Greater Benefit—Since the maximum benefits of fluoridation occur when the fluoride is incorporated in the tooth enamel while it is being formed, the younger children, who had more of their teeth formed under this ideal condition, received greater benefit than the older children.

Greater Proportion to Benefit in Future — Since the beneficial effects continue throughout life once the caries-inhibiting effect is established, as succeeding generations are brought up on the fluoridated water supply, an increasing proportion of the entire population of Norway, Maine, will benefit from fluoridation.

Adapted from Medical Intelligence, *New England Journal of Medicine*, **260**:127 (Jan. 15) 1959.

A Simplified INJECTION *Technique*

GALEN W. QUINN, D.D.S., M.S., Durham, North Carolina

DIGEST

An injection may influence a person's attitude toward seeking and receiving dental and medical advice and treatment. Regardless of the site, any injection may be painful or, after the injection is made, discomfort may be experienced due to the reaction of the drug that has been injected. This article illustrates the sixteen steps involved in a technique for making painless injections with a Luer-Lok syringe.

Figure One

The pen grasp offers the best method of control over the syringe. This allows "finger touch control" instead of "hand touch." The thumb can be moved from the barrel to the plunger without causing any movement of the needle.

Figure Two

The "modified" pen grasp allows control and finger rests. It is impossible, however, to engage the plunger with the thumb from this position without "wriggling up the barrel," thus causing pain.

Figure Three

The "quick direct thrust" method offers no finger support and "hand touch control" is used.

Figure Four

Because of the shorter length the 2-cubic centimeter glass syringe can be controlled easier than the conventional cartridge syringe. A 2-cubic centimeter glass syringe with a ¾-inch needle measures 5½ inches as compared to 9¼ inches for the cartridge syringe.

Figure Five

The glass syringe may be filled from a cartridge or bottle. Popular brands of local anesthetics may be obtained in 30-cubic centimeter bottles.

Figure Six

The glass syringe may be filled from a cartridge syringe. The hub on the cartridge syringe is removed and the lumen is enlarged to facilitate entrance of the needle of the glass syringe. Compression of the cartridge syringe fills the glass syringe.

Figure Seven

How much infection is spread from injections regardless of the site? The lumen of the needle on the glass syringe can be washed clean after each injection by forcing hot water from the barrel through the lumen. The only way the needle on the conventional type syringe can be cleaned is by the use of a wire. This is an inefficient method of cleaning the lumen and is frequently omitted. Needles do not "breathe" nor is water circulated through the lumen during boiling. Steam autoclaving is the sterilizing method of choice. As shown in this illustration, as soon as pressure is released from the rubber stoppers, fluid and remaining anesthetic solution are aspirated into the needle. If the anesthetic or tissue fluids are not removed from the lumen, they become solidified upon heating. The accumulation will either be forced into the next patient, or occlude or partly occlude the lumen. *It is demonstrated that more than one injection from a single cartridge is to be condemned.*

Figure Eight

Injections are painful because nerve endings are activated by the sharp cutting action of the needle. If the nerve endings are deactivated by pressure, the pain response to the cutting action will be diminished.

Figure Nine

Labial and buccal infiltration injections can be made routinely without pain. The lip or cheek is pulled taut as demonstrated. The tip of the needle is placed on the taut tissue (blanched) at the junction of the free and attached tissue and the free tissue (lip or cheek) is *pulled over* the tip of the needle. A small amount of anesthetic is slowly expressed, the needle is moved through the tissue until the desired site has been reached where the bulk of the anesthetic is deposited.

Figure Ten

Mandibular block injections are administered in the same manner as the labial and buccal infiltration injections. A sterilizing solution is applied after the site of injection has been determined. The index finger of the free hand is placed parallel to the site of injection on the crest of the ridge.

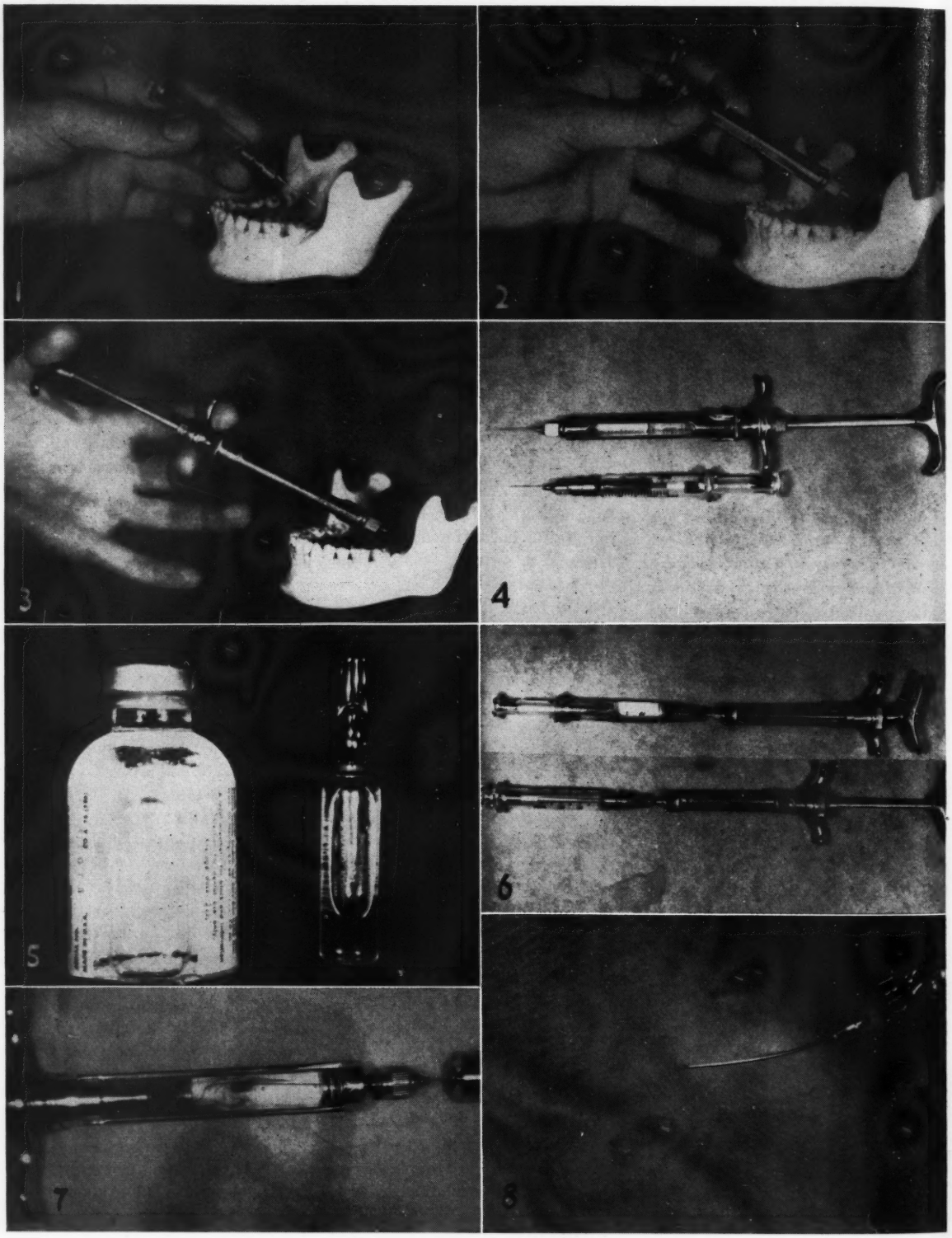
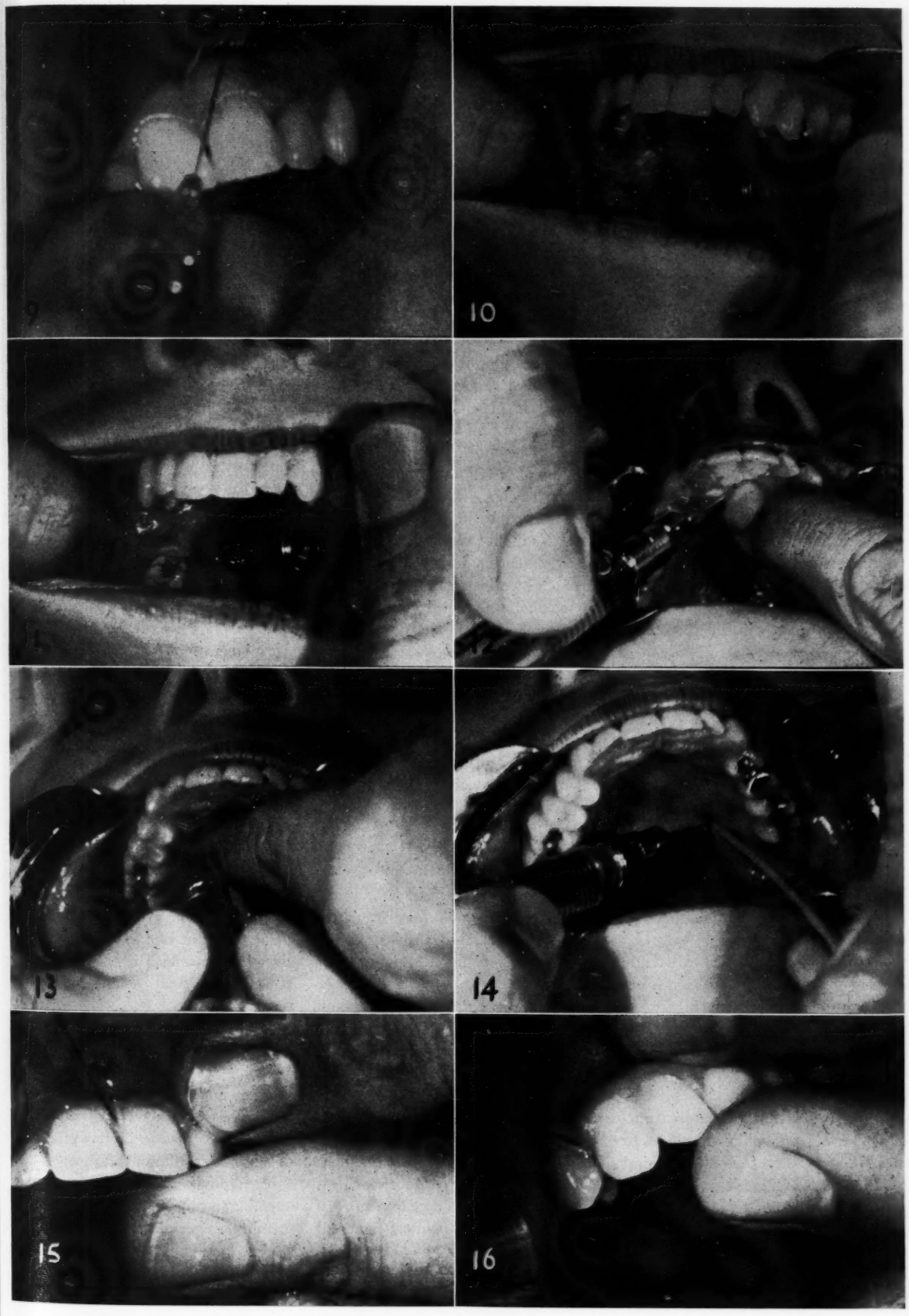


Figure Eleven

The long buccal injection is made immediately after the mandibular block to obviate the necessity of "two" injections or preparations. The index finger is moved slightly to the buccal and the tissue is pulled taut between the thumb and the index finger. As the tissue is pulled taut the tip of the needle is laid on the blanched tissue and free tissue is pulled over the tip of the needle.


10
13
14
15
16

Figures Twelve and Thirteen

Palatal injections are usually quite painful. Nerve endings may be activated by pressure from a fingernail or by a blunt object such as the end of a cotton applicator.

Figure Fourteen

As pressure is applied and blanching occurs, the needle enters the tissue.

Figures Fifteen and Sixteen

Palatal injections may be given painlessly by first making the necessary labial or buccal infiltration injections. In the same procedure the needle can be withdrawn and passed through the intraseptal tissue. A painless lingual injection can then be effected if necessary to obtain better anesthesia.

Duke University Medical Center

The Significance of Liver Dysfunction in Mouth Cancer

NORMAN TRIEGER, D.M.D., GRANTLEY W. TAYLOR, M.D., and DAVID WEISBERGER, D.M.D., M.D., Boston, Massachusetts

Discussion

While a large group of people in the age group 50 to 70 are adjudged to have evidence of oral and dental irritation, the study undertaken here suggests a distinct role attributable to these agents. In comparing carcinoma of the floor of the mouth, in which defective dentures and other dental irritants may act, with a group of patients with carcinoma of the tonsillar fossa, there is found a significant difference in the presence of such irritants. A poorly fitting prosthesis may be said to play a role in cancer of the mouth, which is easily as significant as that of syphilitic infection, often given prominence in previous studies.

Incidence of Alcoholism—In the past a number of investigators have remarked on the apparent high incidence of alcoholic patients observed with carcinoma of the mouth and tongue. Heavy alcohol consumption has been cited by several investigators as a significant contributing factor in cancer of the mouth.

Findings Presented—In this study it was shown (1) that heavy alcohol consumption was present in 75 per cent of patients with cancer of the floor of the mouth, palate, and tonsillar fossa. (2) The incidence of overt hepatic cirrhosis was 58.8 per cent of 68 patients who were thoroughly evaluated while admitted to the Massachusetts General Hospital for treatment of mouth cancers. (3) This figure does not represent the additional group of 84 patients with oral carcinoma, in which adequate information was lacking in the hospital records.

Mode of Action—The exact role or mode of action of alcohol in the genesis of oral cancer is, of course, unknown. It may be speculated with the aid of available data that the local effect of alcohol on the oral mucosa may be of lesser importance and secondary to a generalized change in the mucosal substrate via malnutrition and resultant hepatic dysfunction. This contention is borne out by the group of patients studied who were nonalcoholic cirrhotics and in whom carcinoma of the mouth developed.

Malnutrition and Hepatic Disease—The importance of malnutrition and hepatic disease is further suggested by other investigators. In India, where the problem of malnutrition is rife and the average life-span is greatly reduced oral carcinomas comprise *more than 50 per cent of all cancers.*

Concept of Cocarcinogenesis

The data presented here foster the concept of cocarcinogenesis, a conditioned substrate upon which factors such as chronic irritation and tobacco may act. These data further suggest that, even in the presence of a conditioned mucosal substrate with superimposed carcinogens and irritants, the process of development of oral carcinoma is slow and may take up to 20 years or more. Mouth cancer developed at an earlier age in those patients in which a diagnosis of hepatic cirrhosis was confirmed. In 10 patients additional primary mucosal cancers developed.

Estrogenic Hormones Implicated—The nature of the altered substrate and what may be responsible for its alteration remains an intriguing problem. Estrogenic hormones have often been implicated in studies on the etiology of carcinoma.

Excess Estrogen Associated with Hepatic Cirrhosis: In a recent report two authorities indicated that in human males excess estrogen associated with hepatic cirrhosis may be cocarcinogenic for liver tissue and perhaps play a role in the development of prostatic cancer as well.

Deficiency in Metabolism of Sex Hormones: In 1939 oral leucoplakia was successfully treated with estrogenic hormones, thereby implicating a possible deficiency or alteration in the metabolism of the sex hormone evoking a substrate change which rendered these patients more susceptible to the development of mucosal cancer.

Epidermoid Carcinoma and Liver Impairment—Epidermoid carcinoma of the mouth has not been observed in this study in a premenopausal female who did not have evidence of liver impairment. The effect of menopause on mucous membranes is obscure.

Disorder of Mineral Metabolism—Alteration of the mucous membrane substrate may be due to disorders of mineral metabolism, often seen with liver disease. The role of zinc and other heavy metals in the problems of cirrhosis, Plummer-Vinson's disease, hypovitaminosis A, pernicious anemia, and their effect upon mucous membranes certainly requires further study.

Adapted from *Surgery, Gynecology & Obstetrics* **108**:232-233 (*Feb.*) 1959.

A Clinical Application of HYPNOSIS *and* HYPNOANESTHESIA *in Dentistry—Part Three*

A. A. PAPERMASTER, D.D.S.,* Fargo, North Dakota

DIGEST

In this, which is the final installment of a three-part article, the author enumerates the many advantages of clinical hypnosis in the dental office and frankly weighs the possible hazards to be encountered in applying the procedure.

Advantages and Disadvantages of Dental Hypnosis

In addition to the advantages inherent in hypnosis, already mentioned, there are several other possible benefits.

1. Clinical observation has demonstrated that healing takes place more rapidly after an operation under hypnosis. Some experimentation supports this position.[2]

2. Hemorrhage appears to be less as the result of hypnosis.[3,4] Similar statements are made in reference to salivation.[4] The control of hemorrhage and salivation is now being subjected to experimental test by the author.

3. Reiter[5] and others[9] mention some success in experimentation with the control of a number of somatic functions through hypnotic suggestion.

4. It is possible in some patients to maintain anesthesia after removal of the hypnotic state. This is accomplished by posthypnotic suggestions and is known as posthypnotic anesthesia. This technique is of great advantage in the alleviation of postoperative discomfort.

Disadvantages

Against the many advantages of hypnosis in the dental practice must be weighed its disadvantages:

1. Hypnotic induction does require time. Each practitioner must judge for himself how much time he is willing to spend in relieving discomfort in his patient. He can proceed much more rapidly however with a relaxed patient than with one who constantly creates difficulties.

2. It should also be realized that a lengthy time for hypnotic induction is usually required only on the first induction. After that the proper posthypnotic suggestions will help the patient to regain quickly the hypnotic state.

3. Public negativism to hypnosis is frequently mentioned. This obstruction can be overcome by public education and when it is realized that hypnosis is a normal phenomenon and that all the manifestations of hypnosis also occur in daily life[6], hypnosis will be accepted as a desirable therapeutic and ameliorative technique.

4. False conceptions of hypnosis sometimes prevent patients from accepting this treatment, and occasionally prevent the professional man from learning the technique and applying it to his patients.

5. Early difficulties may occur from lack of experience which will largely disappear with the increase of skill. A patient who has had hypnosis with apparent good results may refuse it subsequently. In most cases this is the result of giving suggestions to which the patient was hostile. As the clinical hypnotist gains experience he becomes sensitive to small cues indicating the attitude of the patient, and adjusts his suggestions accordingly.

6. The inexperienced dental hypnotist will also have some patients who awaken from hypnosis during the course of treatment. This can be avoided by the exeperienced operator who will recognize the indications of difficulty in remaining in the hypnotic state.

Dangers

Among the disadvantages of clinical hypnosis there are certain dangers. The ability to hypnotize people can often inflate the ego of an operator. Novices are sometimes boastful of their assumed powers and believe that they can perform things beyond their capabilities, thereby trespassing in the fields of allied professions.

Symptom May Be Covered—Some dentists feel honored when asked by

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[2]Crasilneck, H. B., et al.: Use of Hypnosis in Management of Patients with Burns, JAMA **165**:103 (May 14) 1955.

[3]Kroger, W. S., and DeLee, S. T.: The Use of the Hypnoidal State as an Amnesic, Analgesic and Anesthetic Agent in Obstetrics, Am. J. Obstet, and Gynec. **46**:655, 1943.

[4]Papermaster, A. A.: Practical Uses of Hypnosis in Dentistry (Unpublished). Presented at Marquette University College of Dentistry, December, 1948.

[5]Reiter, P. J.: The Influence of Hypnosis on Somatic Fields of Function. Experimental Hypnosis, New York, The Macmillan Co., 1952.

[6]Heron, W. T.: Principles of Hypnosis, Southern Medical Journal **48**:307 (March) 1955.

[7]Jacoby, J. D.: A Statistical Report on the Practical Use of Hypnosis in Dentistry, J. Clinic, and Experimental Hypnosis **3**:117 (April) 1955.

[8]Kroger, Wm. S., and DeLee S. T.: Use of Hypnoanesthesia for Cesarean Section and Hysterectomy, JAMA **163**:442-444 (Feb. 9) 1957.

[9]Leonard, A. S.; Papermaster, A. A.; Wangensteen, Owen, H.: The Treatment of Postgastrectomy Dumping Syndrome by Hypnotic Suggestion, JAMA **165**:1957-1959 (Dec. 14) 1957.

TABLE 1

Age Group	Number of Patients Treated with Hypnosis	Per cent of Total	Number of Total Failures	Per cent of Total Failures
3- 6 years	37	2.0	20	1.09
7-15 "	368	20.0	7	.38
16-30 "	644	35.0	13	.71
31-50 "	460	25.0	16	.87
51 and over	331	18.0	18	.98
Total	1840	100.0	74	4.03

The information in this table was obtained from reports of patients treated between June 1948 to December 31, 1954. Among those listed as failures are patients who have since had dentistry performed successfully in the hypnotic state. In the last four years the number of dental patients treated under hypnosis has increased to more than 2,000 and induction failures have been less than 2 per cent. The youngest patient treated to date was two years and seven months and the oldest was 84 years. Improved techniques and better understanding of hypnosis and its potentialities have made this possible.

a physician to hypnotize a patient and remove a pain or some other symptom. If this is done without a thorough professional examination of the patient, pathologic conditions may be masked by a removal of symptoms.

Conflicts May Be Precipitated—Because the dentist is not trained in psychiatry and may not have a full knowledge of the medical history of the patient, he can, in an attempt to experiment, precipitate hidden conflicts. Mental conflicts can be induced in a patient because of some misdirected suggestion. Thumb-sucking, nail-biting, and bruxism should not be treated with hypnosis. These conditions are approached through psychiatry.

Case Report—The harmful after-results of a tactless suggestion is illustrated in this report:

1. A dentist placed a dental assistant in hypnotic sleep and regressed her to the age of five years. He then told the subject that she was at her fifth birthday party and asked her to describe the party and the gifts she had received.

2. When the subject did not respond he continued to insist on an answer. The patient then broke into tears.

3. The dentist attempted to elicit other information from the subject, but was unsuccessful.

4. After telling her that she would have no memory of the trance, he awakened her. The subject awakened in a highly nervous and tense state.

5. She said she felt shaky and nervous but she didn't know why. When asked if she remembered her fifth birthday, she said she remembered it most distinctly because she hadn't had a birthday party and had not received any birthday gifts.

6. The subject added that it was one of the periods of her life that she wanted to forget. The dental hypnotist had inadvertently opened an old wound in this subject's mind, and created a state of conscious anxiety.

The Practicality Of Hypnosis

So far, few statistics in regard to dental hypnosis are available. A check of office records for the period of six years and a half revealed the results indicated in Table I.

Results Satisfactory—Hypnosis was shown on the records to be beneficial to most patients on whom it was attempted. In a total of 1840 patients there were only 4 per cent failures. The degree of benefit received by each patient cannot be shown statistically, and will vary from person to person.

Results Verified—Similar results are evident in the data published by Jacoby.[7] He reports on 197 patients with an average of about four sessions per patient.

Of the 197 patients, four refused hypnosis and four were not induced. This makes about another four per cent for whom hypnosis failed to give relief for one reason or another.

Not a Substitute—It must not be assumed that hypnosis is used in lieu of local anesthesia. The main purpose of hypnosis in dentistry is to produce in the patient a feeling of rest, relaxation, and well-being. In this

TABLE 2

Jacoby's Use of Dental Hypnosis According to Type of Dental Treatment

Surgical (exodontics)	107	appointments
Operative	527	"
Prosthetic	15	"
Periodontic surgery	46	"
Endodontics	14	"
For suggestive conditioning only	67	"
Total appointments	776	

practice, teeth were removed without the use of a chemical anesthetic in slightly less than 5 per cent of the cases. Yet only 18 per cent of the patients needed a local anesthetic along with hypnosis to have operative dentistry, crown and bridge, endodontic, and periodontic treatment performed without pain.

When patients on whom a local anesthetic was used in conjunction with hypnosis were compared with those on whom hypnoanesthesia alone was used, no difference in reaction was noted.

Summary

Hypnosis, as a method for the most effective use of suggestion, can be used in dentistry for relief of certain psychologic and physiologic difficulties which produce tension and discomfort for both the dentist and the patient.

A simple psychologic approach to the patient and a subsequent procedure for the induction of hypnosis and hypnoanesthesia is presented. This procedure was put to use on 1840 patients, of which only 4 per cent failed to show noticeable benefits. Although hypnoanesthesia *per se* was used on only 5 per cent of the patients requiring oral surgery, 82 per cent of the 1840 patients found it effective when restorative dentistry was done for them. Patients wearing prosthetic appliances were helped and gagging was prevented.

Postoperative discomforts were lessened and in some instances completely prevented when hypnoanesthesia was employed as an adjunct to chemoanesthesia. The healing processes were enhanced. Though this cannot be explained at the present time, Kroger and DeLee[8] and other writers[2] have reported the same results in major surgery and the healing of burns.

As with all techniques, the method of hypnosis involves dangers, and disadvantages as well as advantages. The disadvantages are not, however, insurmountable and in the view of some practitioners fade into insignificance when weighed against the advantages.

Courses of college instruction in hypnosis are not as yet available to the dental profession. Dental schools are urged to take the lead in establishing classes in hypnosis, have the subject taught by recognized authorities in the field, and thus standardize it.

Hypnosis is not meant to replace or supplant any procedure now in use, but rather to serve as an adjunct for the improvement of present dental procedures.

436 *Gate City Building*

Diagnostic Significance of Lesions Affecting Oral Tissues

TOM D. SPIES, M.D., Birmingham, Alabama

THE RESPONSE of the alimentary tract to inadequate diets never has been studied as much as it deserves. The tissues lining the cavity of the mouth are easily examined and the examination causes no discomfort to the patient. In 30 years of studying deficiency disease, my associates and I have been impressed by the frequent appearance of lesions in the mucous membranes of the oral cavity, tongue, and gingivae. In a series of 914 consecutive patients admitted to the Nutrition Clinic of the Hillman Hospital, Birmingham, Alabama, the presenting symptom in 329 of these patients was soreness of the mouth and tongue. From the point of view of their specific chemical etiology, the lesions affecting the oral tissues frequently are mixed and in many instances a number of therapeutic agents are required for complete treatment. Because of the similarity of some of the lesions due to a deficiency of nicotinic acid, vitamin B_{12}, or folic acid specific diagnosis is difficult.

Essential Nutrients Required—The purpose in showing lesions of the intestinal tract which tend to be more easily diagnosed than the average and less complicated in their clinical manifestations is to stress the point that one's working hypothesis, however scientific, is not successful in bringing about gratifying results unless the damaged tissues of the sick person receive the essential nutrients needed to restore them.

Vitamin Therapy Accepted—At the present time in the practice of medicine in the United States, vitamins are much more appreciated and accepted than they were some years ago. Patients receive them in large amounts, with the result that one seldom sees lesions such as we have described. This has been one of the great advances in vitamin therapy. It has been gratifying to see that a vast group of practitioners who a few years ago were using these essential nutrients for the treatment of specific disease states are now using them to maintain health, strength, and vigor.

Adapted from *Journal of the American Medical Association* **167**:677-679 (June 7) 1958.

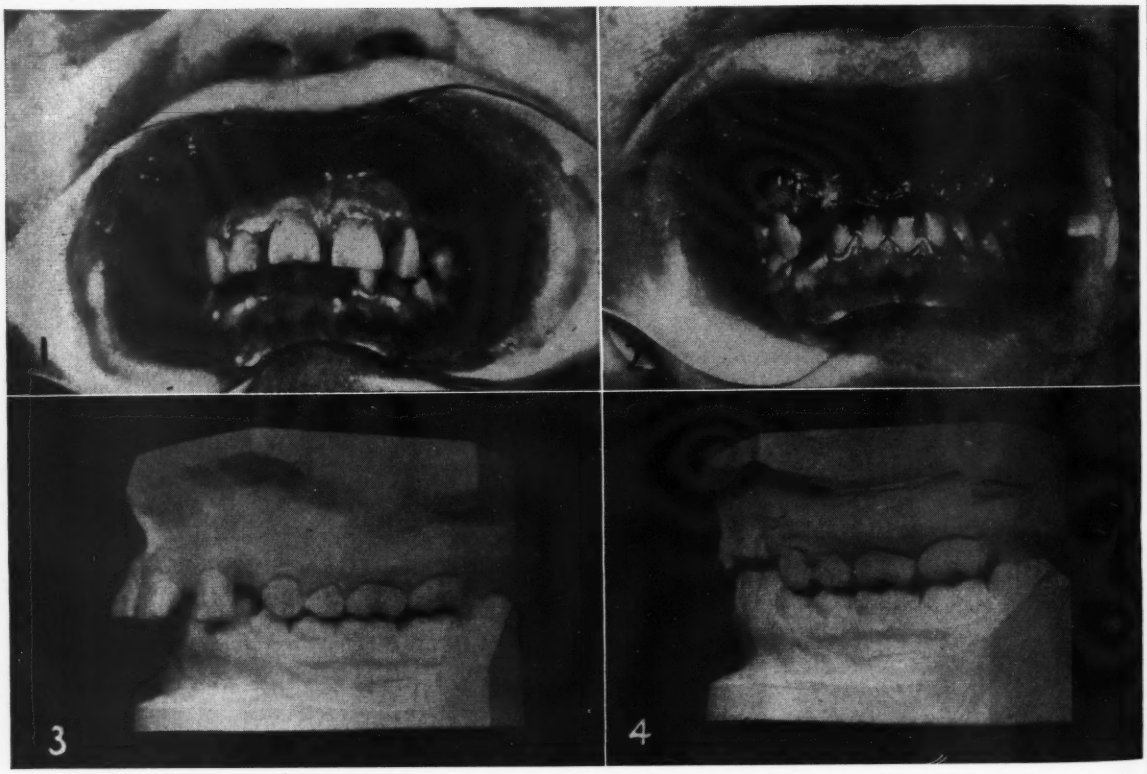
Combination SPLINT *and* PARTIAL DENTURE *for* MOUTH RECONSTRUCTION *Direct–Indirect Technique*

JACK F. CATHCART, D.D.S., Berkeley, California

DIGEST

A situation is frequently encountered by dentists wherein improper alinement or eruption of the upper anterior teeth has caused a condition of extreme overbite and overjet, resulting in resorption of the bone-supporting tissue of that area. The result of this resorption is the loss of the anterior teeth involved at a relatively early age.

The posterior teeth and the lower anterior teeth in most of these cases are in normal occlusion except that the abnormal closure of the bite has allowed the lower anteriors to strike the lingual soft tissue of the upper anterior teeth to such a degree that the replacement of those teeth, by a fixed bridge or by a simple partial upper, is impossible due to the lack of clearance created by the closed bite. This article describes a relatively simple and extremely accurate technique which has been used in these situations.

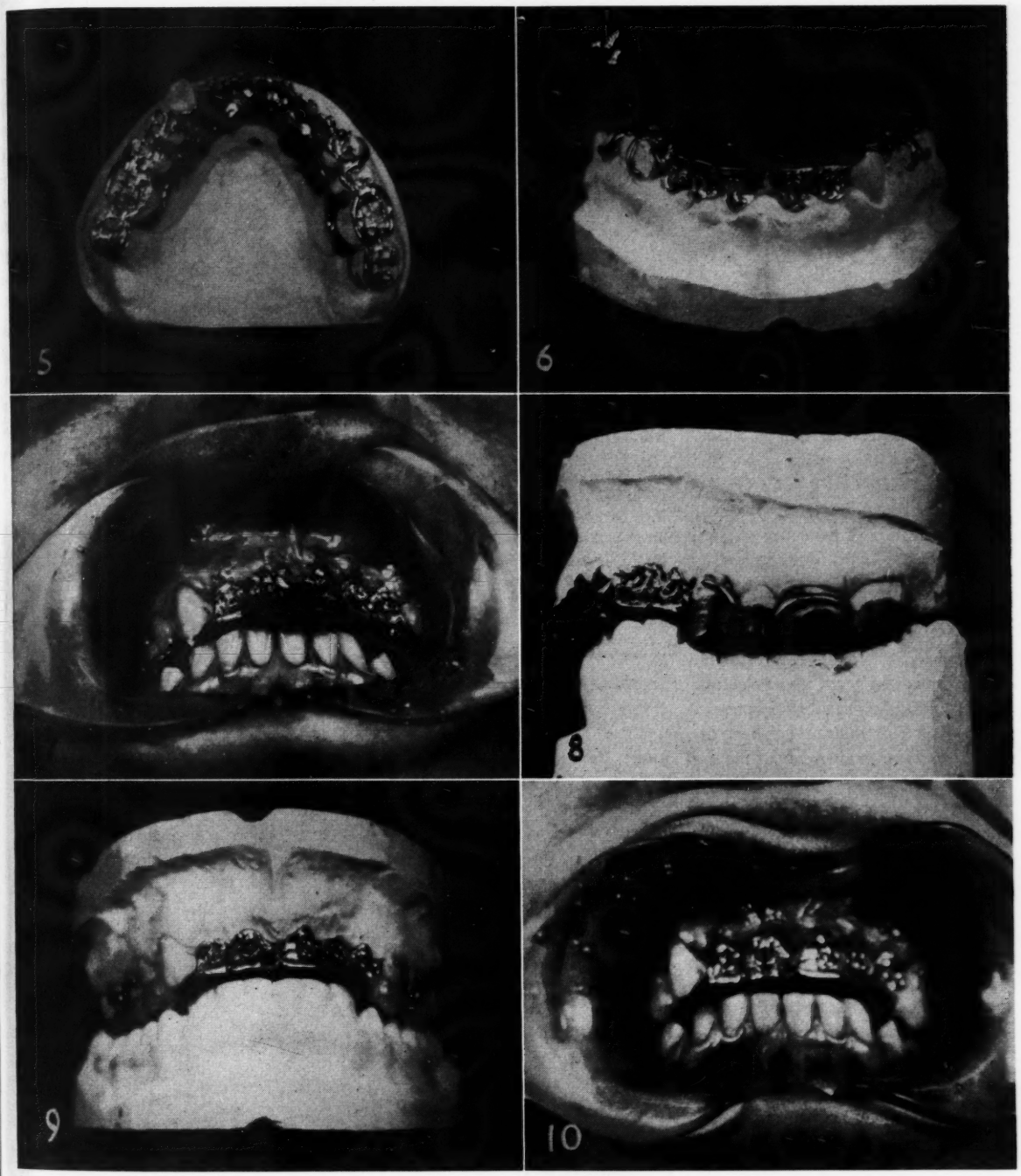


1.
Case as presented showing excessive overbite and overjet with abnormal separation of anterior teeth.

2.
After extraction of five anterior teeth. The bite had closed to the extent that the lower anteriors struck the palate area; thus, not enough tolerance was possible for a removable appliance, even a metal casting.

3.
Lateral view of casts illustrating amount of overbite and overjet.

4.
Lateral view of casts after extraction; comparison with Figure 3 shows amount of labial bony process trimmed away for finished esthetic appearance.



5.
Precision metal framework casting.

6.
Labial view of metal casting illustrating loops and extension lugs for attachment of acrylic teeth.

7.
Casting in position in mouth with a modeling compound stop chilled to hold the bite open at desired space opening.

8.
A tentative wax-up on unarticulated model using compound, anteriorly, to give approximate spacing (the indirect part of technique). The case is then placed in the mouth and the patient chews occlusion stop in position to prevent overclosure of bite (the direct technique).

9.
Posterior teeth forming splint are processed in acrylic, matched to the color of the patient's teeth. The splint is finished and polished on the model.

10.
The restoration is placed in the mouth and checked through ranges of occlusion for interfering high spots. Little adjustment is necessary as occlusal form and range have been directly cut in on wax-up by the direct method of the patient's occlusion. This method is more accurate than any type of articulator can produce.

11.
Anterior teeth are tentatively waxed up. In the patient's mouth, the incisal length and lingual shape are cut in the wax by the newly established range of occlusion determined by the posterior teeth. Correct labial shapes are carved for esthetic appearance.

12.
Case finished and polished on model.

Treatment Problem

The prosthodontist must solve the problem of the closed bite by (1) extracting the remaining upper posterior teeth which in most cases are in good condition, or (2) opening the bite by crowning the posterior teeth and making the anterior restoration afterward

Removal of good posterior teeth and the placement of a full upper denture is poor dentistry if such a measure can be avoided. This solution has been resorted to, however, because of the extensive treatment required and the relatively high cost to the patient of mouth reconstruction that involves the placement of cast crowns to open the bite and the construction of a fixed anterior bridge or partial upper denture to replace the upper anterior teeth.

Practical Solution

A less expensive and simpler solution to the situation described, one involving less operative procedure and less discomfort to the patient, is the use of a partial upper denture that acts as a splint to open the bite and allows a normal occlusal clearance and functional movement of the jaws.

Combination Procedure—Through the use of the direct-indirect technique, the necessity of mounting the case on an articulator and the tedious carving of the occlusal surfaces for normal interlocking with adequate clearance of the posterior teeth is eliminated. The subsequent milling and adjustment in the patient's mouth to correct the inaccuracies incurred by any kind of articulator in attempting to reproduce the condyle movements of the patient are also eliminated.

Indirect Technique—While the occlusion has been tentatively waxed on a model (the indirect step of this technique) the actual occlusal and anterior height of the restoration is chewed in by the patient. An anterior positioned stop is used to prevent closure.

Direct Technique—In the direct part of the technique the true lateral and anterior-posterior range of occlusion of the patient is obtained. Upon processing, adjustments, except extremely minor ones, are eliminated.

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13.
Completed restoration, which is now a combination removable denture and splint. Could be technically termed a removable splint-bridge, since it is fundamentally tooth supported.

The EDITOR'S *Page*

ABNORMALITIES in the occlusion can destroy a dentition and produce other painful syndromes. The misdirection of masticatory forces and the overloading of teeth with excessive stresses are vectors that undermine the supporting bone. It is generally agreed that the destruction of alveolvar bone from periodontal disease is the chief reason for tooth loss in persons past middle life. Certainly mechanical stress is one of the contributory causes of periodontal disease.

Before a dentist is prepared to equilibrate an occlusion he must understand the normal relationships of teeth at rest and in function. Therapy must be preceded by a basic knowledge of the masticatory apparatus. One cannot evaluate or treat any disease without a knowledge of the normal conditions.

Although a knowledge of occlusion should permeate virtually every aspect of clinical dental practice there have been few attempts made to integrate the subject to make it meaningful to *all* clinicians. The orthodontist, the periodontist, the prosthodontist have each spoken a different language on occlusions. This should not be, because the subject embraces all of these specialties and is larger than any one of them. We need a unitary approach to the subject, not a fragmented one. That objective has been accomplished in a recent book.[1]

As an example of the practical approach to equilibration by selective *reshaping* of the teeth these precautions have been enumerated by Shore:

"1. If a great amount of reshaping is anticipated, local anesthesia, but not block, should be used to prevent pain and apprehension. If mandibular block is used, the mandibular neuromuscular relationship will be disturbed.

"2. The operator should place the finger of his left hand on the tooth that is being reshaped to minimize vibration.

"3. To prevent thermal injury to the pulp, a water-spray attachment should always be used during the removal of tooth structure.

"4. The tooth should be so reshaped that the basic general anatomy of the tooth is preserved.

"5. After they have been reshaped, the teeth should be highly polished.

"6. If it should be necessary to remove a large amount of tooth structure, metal veneers should be provided to cover the occlusal surfaces.

"7. If possible, the mesiolingual cusp of the upper molar should not be ground.

"8. After equilibration, the teeth should be tested for mobility induced by minute interfering contacts. This may be done if the operator's finger is placed on the tooth and in the buccal sulcus, while the patient taps his teeth together in centric relation.

"9. The patient should be warned that after his teeth have been equilibrated, there may be some pain when he eats, owing to the fact that teeth which were not previously functioning are now bearing some of the masticatory forces. This pain will disappear. The patient should also be warned not to test his teeth immediately by eating hard foods.

"10. Abrasive pastes should be avoided because they will reduce the vertical dimension through indiscriminate removal of occlusal areas.

"11. As the teeth are equilibrated in the excentric ranges of articulation, centric-relation occlusion should be constantly checked.

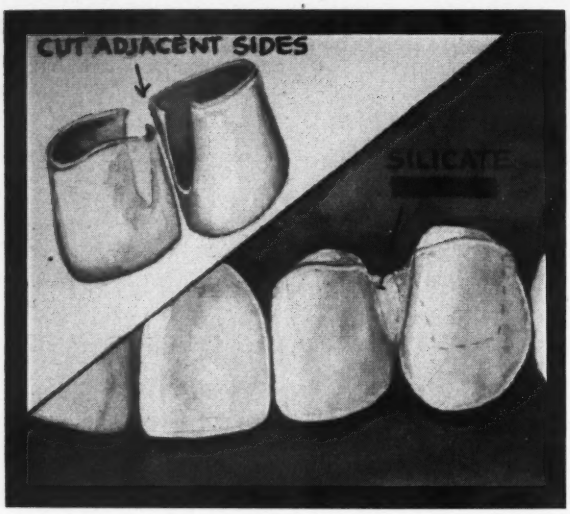
"12. Frequently, an interfering contact in centric relation occurs on the transverse ridge of a maxillary molar. This can be reshaped without too much loss of efficiency in the protrusive range.

"13. If the interfering contact in centric relation is on the anterior teeth, the mandibular teeth should be reshaped. This procedure will not eliminate the necessary contacts of the maxillary teeth in the excentric ranges of articulation.

"14. Every step involved in equilibration should be planned carefully, and tooth structure should not be removed unless the rationale for the selective reshaping of the teeth has been firmly established."

This is an important, how-to-do-it and generously illustrated book (242 pictures) by a clinician for clinicians.

[1]Shore, Nathan Allen: Occlusal Equilibration and Temporomandibular Joint Dysfunction, Philadelphia, J. B. Lippincott Company, 1959.



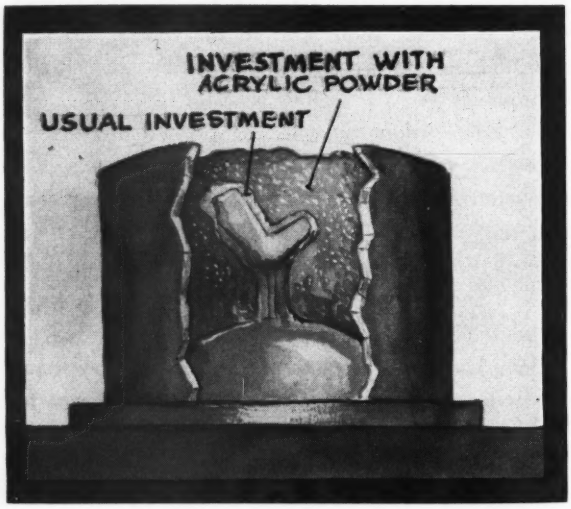
1

Clinical and Laborator

Immediate Temporary Bridge

Roger K. Stockton, D.D.S., Ft. Lauderdale, Florida

1. Select two celluloid or plastic crown forms and cut out the adjacent areas of interproximal contact. Fill the crown forms with either silicate or plastic. The one crown form is placed over the abutment tooth. The attached other form serves as a pontic.

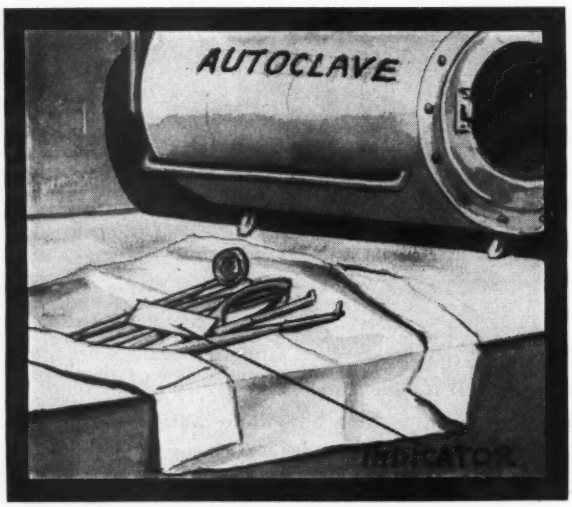


2

A Technique for Large Castings

Harold Crandall, D.D.S., Salina, Utah

2. After the pattern has been painted with inlay investment and allowed to set the investment is completed with a mixture of one part denture acrylic powder and four parts of the regular investment. The acrylic powder burns out to give greater porosity which allows for more rapid escape of gases during the casting process.



3

Testing Sterilizing Efficiency of Autoclave

David S. Hirsch, D.D.S., Hamilton, Ohio

3. A color indicator card (ATI Steam-Clox) is placed near the center of the pack that is to be placed in the autoclave. The color reactions on the card indicate four stages of sterilization. For complete sterilization it is necessary that all four indicators turn green.

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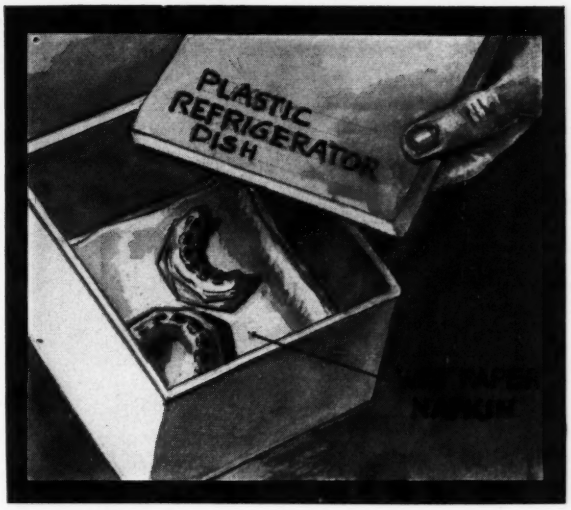
SUGGESTIONS . . .

Protection of Impressions

Kay Jorgensen, D.D.S., Houston, Texas

4. For the temporary protection of an alginate or hydrocolloid impression from shrinking, place the impression on a wet paper napkin and put into a covered plastic refrigerator dish.

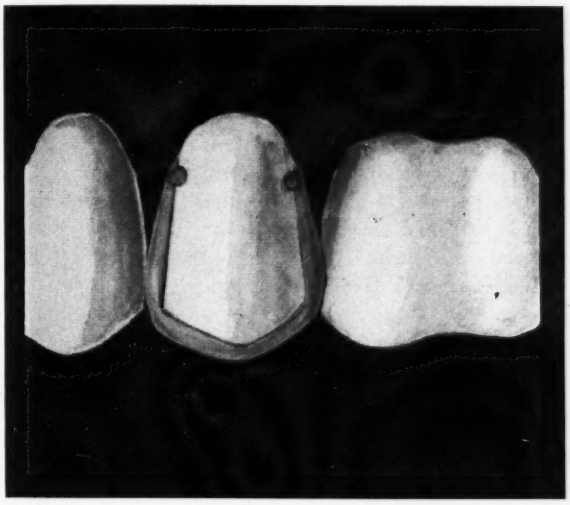


4

Additional Retention for a Three-quarter Crown

R. W. Pedersen, Boyd, Minnesota

5. Drill two holes near the gingival margin of the three-quarter crown. The holes are made one-half in enamel and one-half in the gold casting. Insert gold foil into the holes. The method serves as a sort of rivet and increases retention considerably.

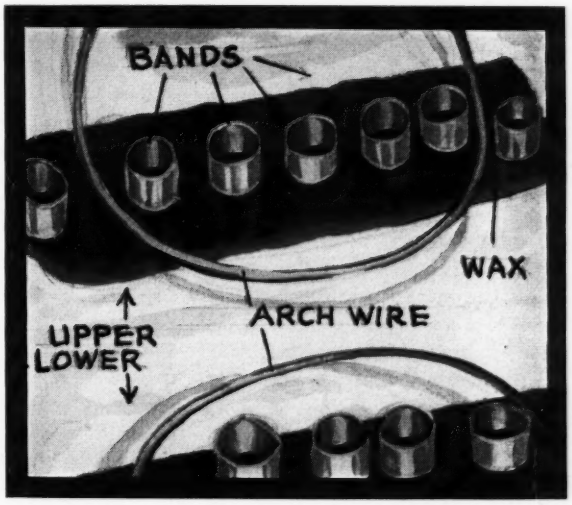


5

Keeping Orthodontic Bands in Proper Order

Thomas L. Parry, D.D.S., Washington, Kansas

6. When bands are removed from the teeth they may be placed in proper order on a piece of soft wax. When time comes for re-cementation the bands are picked up in proper sequence and returned to the appropriate teeth.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 284 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

MEDICINE and the Biologic Sciences

Parkinson's Disease

Parkinson's disease is a chronic nervous disease characterized by (1) a fine, slowly spreading tremor, (2) muscular weakness and rigidity, and (3) a peculiar gait.

The onset may be abrupt; usually, however, it is insidious. The initial symptom is a fine tremor beginning in the hand or foot. This may spread until it involves all the members. The face becomes expressionless and the speech slow, measured. The head becomes bowed and the body is bent forward. By this time the gait is characteristic and the steps grow faster and faster. As the disease progresses the body leans more and more forward.

The disease is one of the most common of the chronic diseases which may afflict mankind. Unfortunately, the ideal resources of treatment are not available in the majority of instances. Adequate treatment and care require the cooperation of several members of the medical sciences.

There are both favorable and unfavorable aspects to Parkinson's disease. The unfortunate aspects do not require emphasis. The patient generally anticipates the worst. The favorable aspects of the disease should therefore be stressed in order to gain the patient's maximum cooperation in achieving success in the treatment program. These favorable aspects are the following:

(1) Parkinson's disease is a comparatively "friendly" illness as it does not shorten life.

(2) It is not inherited or contagious.

(3) It does not cause paralysis or numbness.

(4) Vision, hearing, and the mental faculties are not affected.

(5) There is no pain in this illness, unless treatment is neglected and fibrosis and contracture of muscles develop as a result of disease atrophy.

(6) There are stationary periods of five, ten, or more years when there is a little, if any, progression in the symptoms.

(7) The patient with Parkinson's disease does not have to be rushed to a hospital for blood transfusions or other such emergency measures.

(8) Many diseases, such as leukemia, cancer, cerebral palsy, multiple sclerosis, and brain tumor, are more serious conditions.

(9) New remedies for Parkinson's disease are being created every day.

(10) For reasons as yet unknown, Parkinson's disease tends to protect the patient from cardiac disease, cancer, tuberculosis, hypertension, and many other illnesses.

The patient should be told that the illness affects the basal ganglion, a small center at the base of the brain, and not the brain itself. Intensive treatment can give him many years of productive and comfortable living. If he neglects treatment, however, he may become disabled in a comparatively short time.

Physiotherapy must be employed regularly through the years by every patient with rigidity. His future well-being demands that he submit to these treatments regularly especially in the presence of contractures, postural abnormalities, impaired gait, and poor balance. It is noted that diathermy, electrotherapy, ultraviolet radiation, and sun lamp are of little value in Parkinson's disease.

The patient should perform all activities within his capacity, but not to the point of exhaustion. He should acquire hobbies and special interests within the limits of his physical resources.

Doshay, Lewis J.: Teamwork in Treatment of Parkinson's Disease, Postgrad. M. **23**:7-18 (*January*) 1958.

The Severely Injured Patient

Too often when treating the severely injured patient the necessity for intensive therapy to support and restore the patient may lead to neglect of planning for the eventual recovery of the patient. The failure to establish a program of total patient care may result in deterioration of the patient's condition. Rehabilitation is concerned with the restoration of the disabled patient to maximal independence. During acute disability the prevention of deterioration is an important factor in securing maximal recovery.

Permanent disability may result from prolonged inactivity due to confinement to bed. The basis of the development of functional ability of any organ of the body is use. Within physiologic limits each part of the body increases in functional ability in proportion to the load placed on it. Inactivity or nonuse results in regression of the part with loss of ability to function.

Functional ability is greatly decreased following injury or during disease. When normal psysiologic demands exceed the ability to respond it becomes necessary to protect the part against further damage by exhaustion or to preserve homeostasis.

As an organ increases in ability its metabolic reserve increases. It is noted that disease deterioration is observed most easily for voluntary muscle. However, the same phenomenon occurs in cardiac muscle, the central nervous system, bone, the au-

(*Continued on page* 274)

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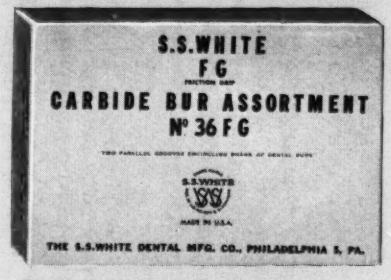

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Fig. 1. Dentist examining patient at close range during detectability test.

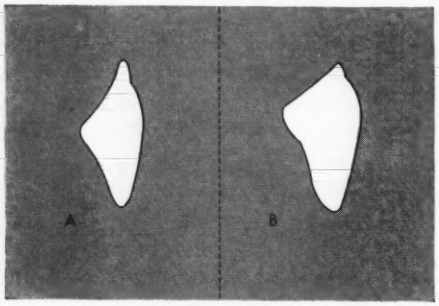

Fig. 2. Dura-Blend now offers choice of profile: (A) Characteristic of new moulds; (B) Typical of many existing moulds.

Fig. 3. New Dura-Blend shade guide has three additional shades. Rugged plastic handles are designed for maximum convenience in matching.

New Moulds New Shades in Dura-Blend

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tonomic nervous system, and other systems.

The loss of ability of the body through disease becomes a serious factor in producing disability in patients who have a disease or injury which necessitates prolonged immobilization. Deterioration may occur to the point that weeks or months of treatment may be necessary to reestablish normal function. Therefore, when rest is prescribed for therapeutic purposes its effect on all parts of the body should be evaluated. Adequate protection must be given to the injured part, but activity should be maintained in normal parts of the body to prevent or minimize their deterioration.

There are times when normal parts of the patient's body deteriorate faster than the injured part heals. In some cases permanent disabilities result from degenerative changes which develop in areas not involved by the original disease of injury. In other cases, many months of restorative therapy are necessary to return these deteriorated parts of the body to normal function. In either case, rehabilitation to independence is prevented or delayed.

The common types of deterioration of patients confined to bed are loss of mobility, loss of muscular strength and endurance, circulatory deterioration, ischemic ulcers, and metabolic imbalances. Immobilization of the patient in bed because of severe injury causes the rapid development of weakness and atrophy of the muscles. Also profound changes in circulatory control and performance whenever patients are confined to bed.

To avoid the deteriorating effects of bed rest, patients should not be confined to bed any longer than is necessary to treat the acute disability. The degenerative effects of the prolonged inactivity may be greater than the beneficial effects of the bedrest. It is important that rest when necessary be confined only to the parts of the body requiring rest.

Kottke, Frederic J.: Psychiatric Aspects of Care of the Severely Injured Patient, JAMA **165**:1930-1935 (*December* 14) 1957.

Tolerance to Alcohol and Drugs

The problem of variable tolerance to alcohol and drugs has far more implications than the question of incidental changed action. It appears that a constant interrelationship exists between constitutional factors, mental conditioning, and the action of exogenic toxins. For instance, the susceptibility and resistance to the infectious diseases are partly dependent on these variable factors.

Tolerance to alcohol and drugs is influenced by the mental state during ingestion of the drug. It depends on fatigue, on whether or not the person is a chronic user of drugs or alcohol, and on the person's weight and condition. It also depends on his cultural and intellectual level.

Primitive men react differently than do civilized men. The primitive man reacts more rapidly and with fewer complications in the same way that a juvenile reacts to cerebral intoxication. Drug effects are more immediate in primitive man than in the civilized (and inhibited) man. Some natives run amok after drug intoxication as they do during pneumonia, malaria, or extreme exhaustion. In the more civilized, alcohol and drugs have to break through a wall of ego-defenses, with all the implications of their breakdown.

The same person may react differently to the same drug at different times. This depends on the underlying psyche and somatic status at each given time.

In some families there is a greater sensitivity to alcohol than is normally seen. The same is true for drugs such as aspirin, quinine, aminopyrine, and barbiturates for which an innate idiosyncrasy sometimes exists. This may be a dominant heriditary factor. In these families there appear to be other symptoms of increased sensitivity of the central nervous system.

A man's mood and attitude prior to a drinking bout determine in part the toxic reaction. In some persons the stability of tolerance is never certain. The driver behind the wheel, for instance, undergoing various psychic tensions is especially subject to this rule of variable reactions.

Certain personality types are especially sensitive to alcohol and sedatives. Persons with strong ego-defenses and compulsions, who are afraid to "give away" part of their conscious avoid any sedative. Sometimes the mere thought of being intoxicated makes them sick.

Food and oxygen have similar effects on alcohol action. Solid material slows the rate at which alcohol get into the blood. During meals there is a lower alcohol curve. Muscular activity also lowers the alcohol level of the blood.

Addiction to drugs and drinking habits seems to be increasing. For this reason the variable tolerance reactions are important. The increasing dependency on medication makes this coincidental combination of drug action, with its pathologic implications, a greater possibility. Some of these coincidental actions are important factors in accident-prone drivers.

Meerloo, Joost A. M.: Variable Individual Tolerance for Alcohol and Drugs, Postgrad. M. **22**:583-590 (*December*) 1957.

Thrombosis of Major Veins

The major veins of the body are the main return channels of circulation from the extremities and viscera. Also included in the term is the vena cava system.

Thrombosis of major veins is caused by various factors. Certain conditions obviously predispose to it. Among these is included a disturbance in the inherent clotting mechanism of the subject. Infections, inactivity, malignancy, recumbent position, and trauma, including surgery, may also play an active or exciting part in initiating thrombosis of major veins. In contradistinction to this, early ambulation and antibiotics have played an amazing part in reducing this incidence of thrombosis particularly following operations of a grave character.

The initial clot may be small in a tiny vein. At this stage it may have little clinical significance other than the justifiable recognition of a potentially more serious state. The clot may remain small or may propagate or extend down and up along the vein. After 2 to 10 days it may be massive, obstructing long segments and the major stems at the base of the extremity.

No distinction should be made in the type of thrombosis other than a division into septic and noninfectious classifications. The clinical appearance is the same. All types of thrombi may lead to propagating clots and embolic phenomena. All tend to obstruct the venous return. All of them histologically ultimately show inflammatory reaction in the vein. Ultimately they tend to become attached and organized. The variations in treatment are based on the extent of involvement

(*Continued on page* 278)

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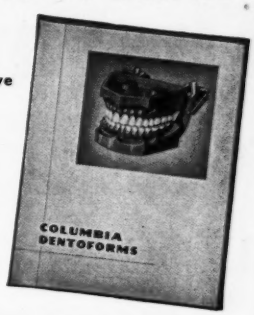

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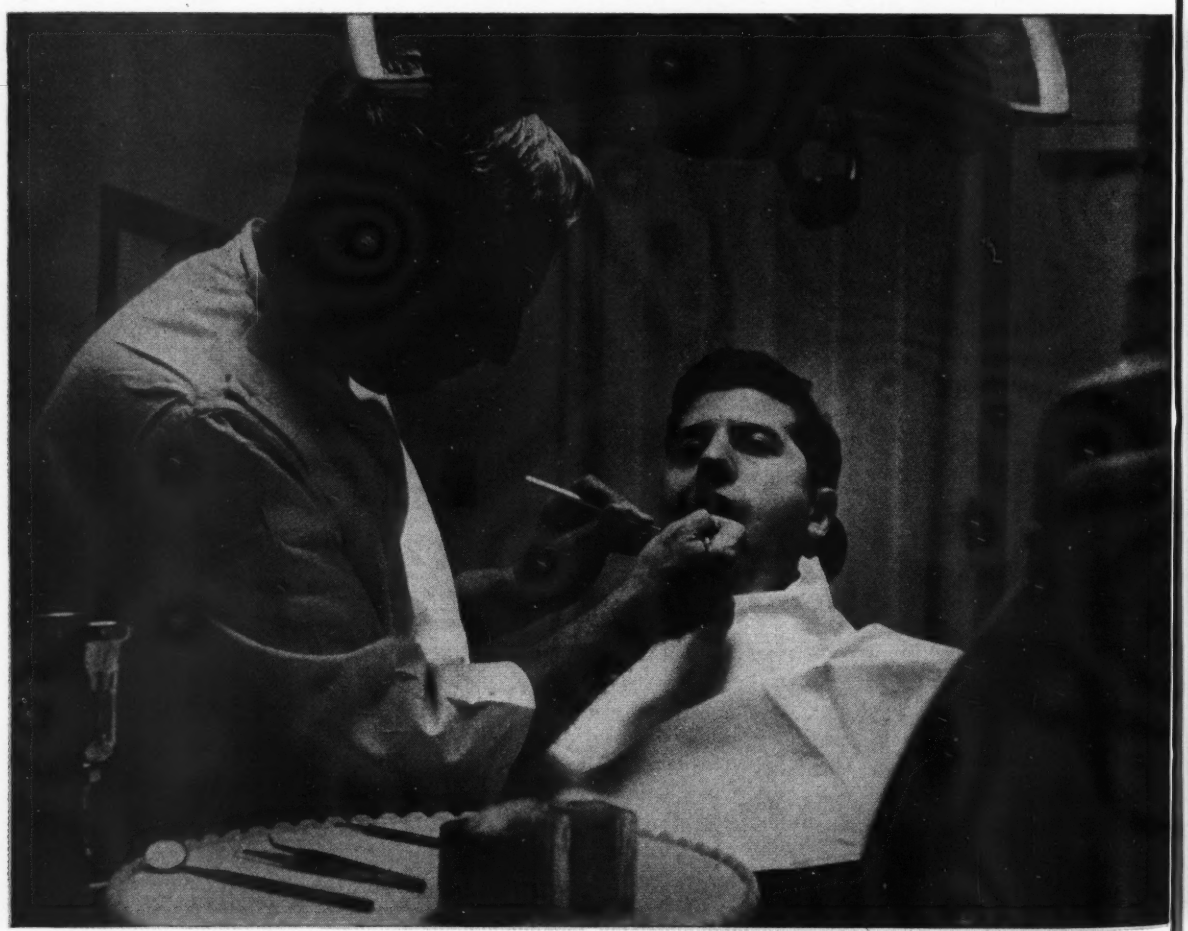
A report of clinical findings published to date:

Thermodent™ Tooth Paste relieved and controlled hypersensitive teeth in 79.2% of the cases studied



Thermodent as an aid to everyday management of hypersensitivity

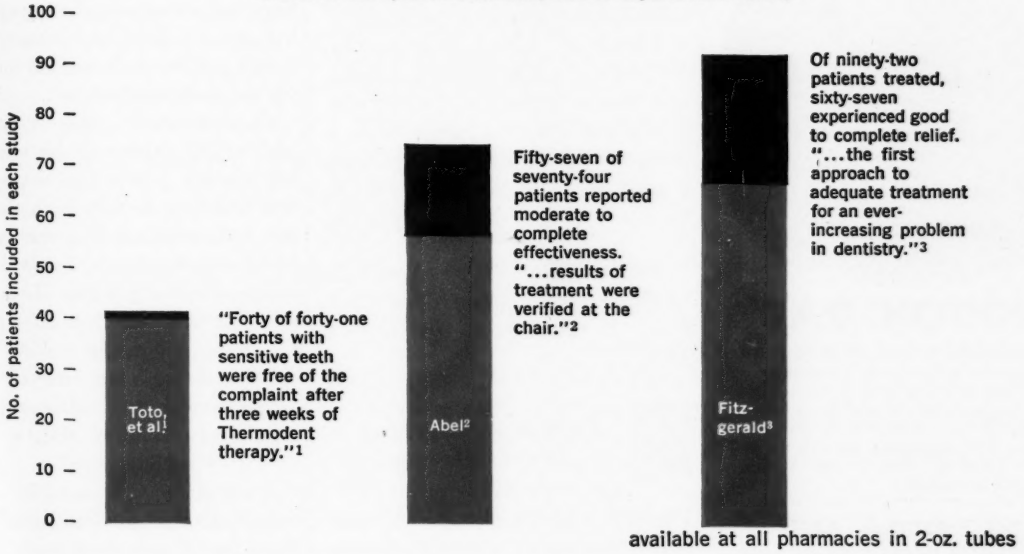
Published reports of clinical investigations show that patients who experience tooth pain from hot and cold or sweet and sour foods—as well as during cold weather—benefit measurably from regular brushings with Thermodent. In 571 observations on 92 patients, it was found that 42 per cent of the patients had complete relief of dentine hypersensitivity—and 30 per cent "good" relief—during regular use of Thermodent. All 92 patients "reported at least some benefit."[3]

The reduced sensitivity afforded by Thermodent allows routine and thorough brushing for patients formerly unable to maintain proper oral hygiene. In addition, office visits are less painful because sensitivity to instrumentation is diminished—making for better patient cooperation and a saving of valuable chair time.

Thermodent for relief during painful dental procedures

In periodontia, for example, extreme dental sensitivity is normally encountered. In a recent study restricted to periodontal patients, the effectiveness of Thermodent as a desensitizing agent was shown by the following results: 97 per cent of the patients experienced complete relief from hypersensitivity after three weeks of Thermodent brushing, yet control subjects with sensitive teeth "were not free from the complaint after five weeks on a placebo."[1]

SUMMARY OF RECENT CLINICAL STUDIES
SHOWING RESULTS OF THERMODENT THERAPY
(Total of 207 patients studied; 79.2% experienced relief)


No. of patients included in each study
100
90
80
70
60
50
40
30
20
10
0
Toto, et al[1]
"Forty of forty-one patients with sensitive teeth were free of the complaint after three weeks of Thermodent therapy."[1]
Abel[2]
Fifty-seven of seventy-four patients reported moderate to complete effectiveness. "...results of treatment were verified at the chair."[2]
Fitz-gerald[3]
Of ninety-two patients treated, sixty-seven experienced good to complete relief. "...the first approach to adequate treatment for an ever-increasing problem in dentistry."[3]

available at all pharmacies in 2-oz. tubes

1. Toto, P. D.; Staffileno, H., and Gargiulo, A. W.: J. Periodontology 29:92 (July) 1958.
2. Abel, I.: Oral Surg. 11:491 (May) 1958.
3. Fitzgerald, G.: Dental Digest 62:494 (Nov.) 1956.

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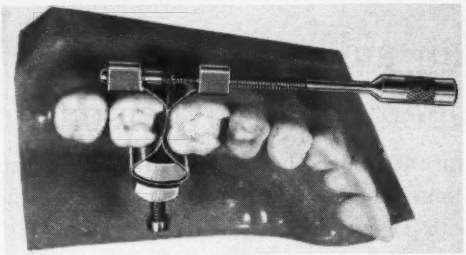

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This instrument separates the teeth. Provides original space for septal tissue. Reduces edema and stops hemorrhage.

Matrix is held in perfect contact at the gingival, with sufficient slack for perfect contact and conformity. No wedge is necessary.

Injury to restoration is impossible, because the matrix is removed to the buccal by releasing the screw on the lingual.

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and whether or not septic emboli may be liberated into the blood stream.

The diagnosis of thrombosis is not always easy. When extensive, the diagnosis is obvious. The clinical course following thrombosis of the major veins of the body is a protracted one: weeks of marked swelling, cyanosis, and pain, and then projected months of continued swelling with external supports, pain, fatigue, and incapacity. Usually after these there occur late sequelae of dermatitis, induration under the skin, pigmentation and recurrent exacerbation of the swelling which may be flare-ups of thrombosis or represent enhancement of excessive edema by overactivity from too many consecutive hours of ambulation.

Thrombosis of deep veins is a major problem with threatening sequelae and lifetime disabilities. Patients with postthrombophlebitic edema form a group with disabilities that represents a huge economic burden not only to the patients but to their communities.

48 REAMERS AT YOUR FINGER TIPS

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Matching numbered holes speed finding and replacing files and reamers. Companion dish continuously protects and sterilizes. Visual inventory gives split second check of completeness of set, prevents misplacements. Work on two successive patients possible without reloading. Rack $12.50. Sterilizing Dish $2.50. Set $15.00.

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St. Louis 8, Mo.

Mahorner, Howard: The Treatment of Thrombosis of Major Veins, Postgrad. M. **22**:551-557 (*December*) 1957.

Cerebral Vascular Insufficiency

Cerebral vascular insufficiency may be precipitated by systemic hypotension or low cardiac output. Often the signs and symptoms are reversible. The brain may be permanently damaged, however, if blood pressure is not restored immediately.

When the entire brain is involved by vascular insufficiency syncope, grand mal seizures, and other generalized symptoms ensue. Generalized insufficiency is most common among extremely hypotensive patients without arterial disease.

A localized vascular insufficiency occurs when a cerebral artery is narrowed by sclerosis or a congenital anomaly and hypotension further impairs blood flow. The localized deficit may cause hemiplegia, hemisensory disorders, and jacksonian attacks.

Permanent focal manifestations have usually been attributed to brain hemorrhage, thrombosis, or embolism. Transient focal signs and symptoms are attributable to vascular spasm. These mechanisms, however, frequently are not demonstrable.

Some causes of systemic hypotension and, consequently, of cerebral insufficiency are hemorrhage or coronary shock, antihypertensive drugs, postural factors, the carotid sinus syndrome and other vasodepressor phenomena, surgery and anesthetics, sympathectomy, cardiac arrhythmias, congestive heart failure, pulmonary hypertension, and gravitational states in aviation.

Even with complete occlusion of the basilar or carotid artery, cerebral signs may occur only during systemic hypotension. If blood pressure is adequate, collateral circulation can supply the compromised area.

Focal cerebral ischemia with or without infarction may be caused by hypotension confined to a single artery and branches. In both the carotid and vertebral systems, arterial blood supplies of the cerebral hemispheres are independent of each other. Although the hemispheres are joined by a potential collateral circulation through the circle of Willis, accessory flow does not occur unless arterial pressures on the two sides are significantly unequal.

If the caliber of a vessel is reduced to half the normal width by sclerosis, blood flow is only about one-sixteenth the previous volume. A superimposed reduction of pressure lowers circulation more drastically.

An artery narrowed moderately by sclerosis or a congenital anomaly may

function adequately. A combination of moderate arterial narrowing and hypotension, however, may cause severe focal ischemia.

Corday, Eliot; Rothenberg, Sanford; and Weiner, Stanley: Cerebral Vascular Insufficiency, Arch. Int. Med. **98**:683-690 (*December*) 1956.

Age and Taste Sensitivity

A sipping technique was used to test 100 subjects, aged 15 to 89, for taste sensitivity to substances of a sweet, sour, salty, and bitter nature. It was found that the curve of development and decline for sensitivity to each of the four taste primaries was essentially the same. All curves showed a noticeable decline after the late fifties. No sex differences were observed nor were there any differences in taste sensitivity between smokers and nonsmokers. . . . The decreasing sensitivity to taste with age is probably due to certain degenerative changes occurring in the taste receptors. . . . Anatomic studies indicate that such changes do occur. Allara reports that the gustatory papillae reach full development at puberty and that regressive changes set in after the age of 45. Furthermore, both Machizuki, studying the foliate papillae, and Arey, Tremain, and Monzingo the circumvallate papillae, report a decrease in number of papillae with age. In addition to a decrease in number of papillae there is also a decrease in number of taste buds. Arey and associates report that in young adults there are approximately 250 taste buds in each circumvallate papilla; over the age of 70 there are less than 100.

R. M. Cooper, I. Bilash, and J. P. Zubek, *Journal of Gerontology*, January, 1959, in *Journal of the American Medical Association* **169**:1702 (April 11) 1959.

Contra-Angles

The Manly Art and the Dental Tissues

For want of a more intellectual outlet I watched two large muscle masses hammer away at each other on a TV fight-cast. Although neither had the skill of Joe Louis or Rocky Marciano at his prime they managed to inflict the kind of trauma that I would not care to receive.

The one boxer at 202 pounds began to suffer exsanguination from the nares early in the bout. The trauma resulted in edema. The edema and the hemorrhage cut off the airway. The accessory breathing apparatus through the mouth was blocked by a tooth protector. The reduced intake of oxygen put the fighter into a panic reaction. The mouth guard was then voluntarily ejected. That left the boxer open to more extensive damage to the soft tissues of the lips and mouth from fists propelled against the dental hard tissues—to say nothing about evulsion of the teeth themselves.

The next act in this physiologic-anatomic drama was the shift of emphasis from offense (what little he had) to defense of his oral mechanism. The aggressor—no mean student of practical psychology—shifted his attack to the body. The result: a paralyzing blow to the solar plexus and its autonomic network. Or in the more fastidious language, the celiac plexus: "a large sympathetic plexus lying in front of the aorta around the origin of the celiac artery. It is formed by fibers from the splanchnic and vagus nerves and is distributed to the abdominal viscera."

The large gentleman of 202 pounds lost the fight on a technical knockout when the referee evaluated his writhings of agony. As one who has taken

(*Continued on page* 283)

for positive post-operative protection . . .

. . in periodontia

PERIODONTAL PACK (Rower)

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and Physicians

How to sharpen your DIAGNOSTIC SKILL

The information from a shelf of textbooks has been compressed into the easily-read, rotating 11¼" dial chart, ORAL DIAGNOSTIC SIGNS. Use of the chart will save you hours of searching through reference material.

The mouth is a mirror that reflects the manifestations of many systemic diseases. One hundred of these system diseases are included on ORAL DIAGNOSTIC SIGNS. The lesions that may appear on the lips, buccal mucosa, tongue, gingiva, and palate are described on the chart.

The dentist encounters lesions of the mouth that should alert him to consider diseases of nutritional or hormonal imbalance, of malignancy, of bacterial or viral origin. In such cases, the dentist should refer the patient to the physician for more thorough examination and treatment. The physician observes lesions of the mouth that may be of mechanical or local infective origin. In such cases, the physician should refer the patient to the dentist for definitive treatment.

The dentist, because he often sees the patient before the physician sees him, has the opportunity to become an important member of the health team by detecting the early expressions of systemic disease. Early detection and treatment of these conditions will save lives!

Every dentist and physician—whatever his specialty or field of particular interest—should have a copy of this important diagnostic aid! Send for your copy today!

ORAL DIAGNOSTIC SIGNS has been prepared by Edward J. Ryan, D.D.S., Editor of Dental Digest, and E. Cheraskin, M.D., D.M.D., Professor of Oral Medicine, University of Alabama.

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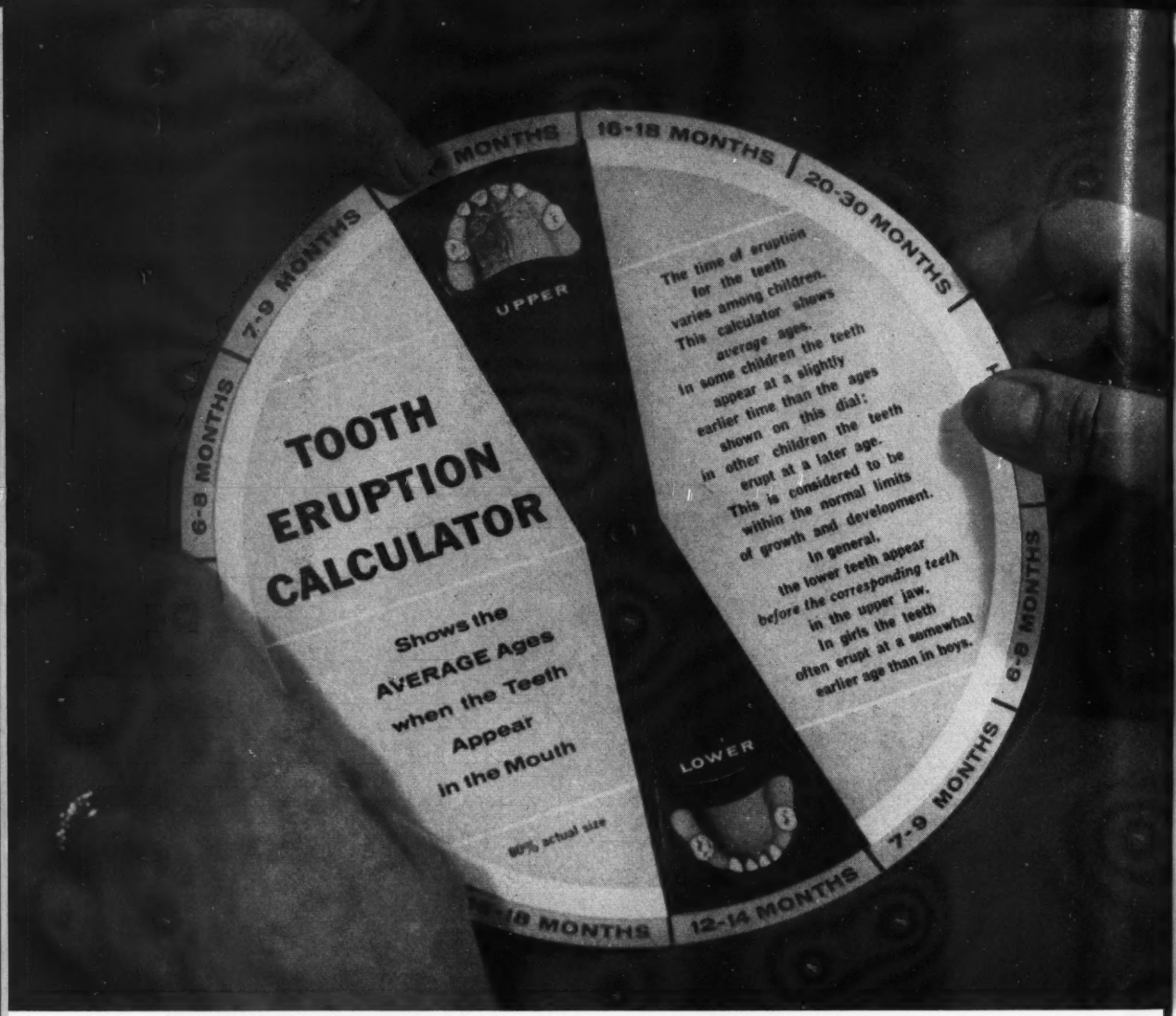
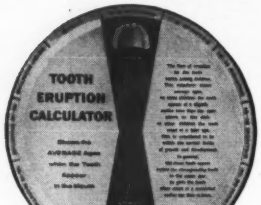
100 *diseases are classified under these ten categories on the chart*

1. Diseases Due to Biologic Agents
2. Physical Agents
3. Chemical Agents
4. Neoplasms
5. Cysts
6. Hormonal Disturbances
7. Developmental Disturbances
8. Nutritional Disturbances
9. Reactions to Stress and Antigentic Substances
10. Miscellaneous Disorders

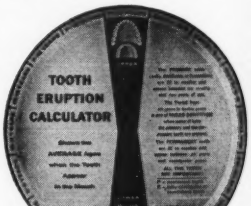

6-8 MONTHS
7-9 MONTHS
16-18 MONTHS
20-30 MONTHS
UPPER
TOOTH ERUPTION CALCULATOR
Shows the AVERAGE Ages when the Teeth Appear in the Mouth
80% actual size
The time of eruption for the teeth varies among children. This calculator shows average ages. In some children the teeth appear at a slightly earlier time than the ages shown on this dial; in other children the teeth erupt at a later age. This is considered to be within the normal limits of growth and development.
In general, the lower teeth appear before the corresponding teeth in the upper jaw. In girls the teeth often erupt at a somewhat earlier age than in boys.
LOWER
12-14 MONTHS
7-9 MONTHS
6-8 MONTHS

What Every Parent Should Know—

about his child's teeth



The *first* tooth is a family triumph! . . . Each succeeding tooth, to the total of 52, should be of major interest to parents . . . *Show* parents on a dynamic time-wheel *what* teeth should appear *where* and at *what* time.



Actual size 7¾" diameter

The TOOTH ERUPTION CALCULATOR shows the dental development from birth to adulthood—when all the teeth are due for appearance in the mouth.

Although there are 44 separate views of the child's mouth on this chart, parents will not find it confusing, for only the two (or four—in the case of mixed dentition) which apply to a certain age level are visible at one time. The dials (one on each side of the two-sided chart) rotate to show upper and lower teeth through 14 stages of development.

Every dentist and physician will want the TOOTH ERUPTION CALCULATOR in his office to demonstrate tooth development to the parents of children.

Every dentist and physician will also want the TOOTH ERUPTION CALCULATOR to give to parents for home use and patient education.

Dental Digest
1005 Liberty Ave., Pittsburgh 22, Pa.

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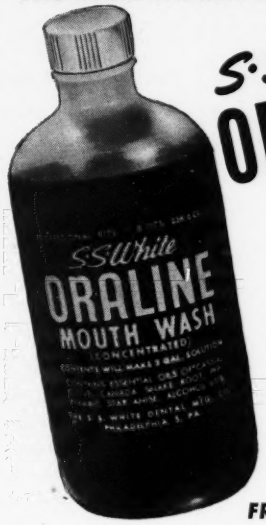
The Ideal Mouth Rinse for Professional and Home Use



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✓ 8-ounce Plastic Bottle for your office. Space-saving—easy to handle. Just remove cap—tilt—squeeze.

✓ Economical because it's concentrated. Makes two gallons of soothing, cooling, cleansing rinse.

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Recommend—prescribe
Oraline for routine home use.

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FREE! Write on professional letterhead for PRESCRIPTION PADS

a few such blows in the friendly exchanges of youth I felt slightly sick myself.

I presume that the mouth guard that did its work so poorly was a single-piece affair that covered both the upper and lower arches en masse. It would seem more appropriate that athletes who are subject to facial injury should have a protector made in separate upper and lower parts that were fitted by a dentist to conform to the specific requirements for each wearer. The upper and lower parts might be connected by some elastic mechanism if that was necessary.

Separate maxillary and mandibular guards would permit the athlete to open his mouth from time to time on occasions of acute oxygen want and still have protection to his dental hard structures. When the parts were held together, as they would be during most of the actual physical contact, the temporomandibular joint would be protected from the sudden jarring and concussive force that often is a factor in a knockout. Separate maxillary and mandibular guards would also allow the athlete to spit out the blood that may pool in the mouth. Blood, when swallowed, may lead to nausea or vomiting.

The dentist-sports fan may try his hand in many fields.

Publish When You Can

"If you have something of value, publish." For more than a quarter of a century I have implored dentists to do that. Many have accepted, many more have ignored the suggestion.

I have known dozens of dentists who had made a clinical observation of merit or who had developed a technique of value. They were urged to publish their material. Many whom I have known have gone to their graves and their information has died with them.

Publication is important because it is a permanent record. Most of what we *say* today is lost soon after it has passed our lips. Much of what we *say* is subject to misunderstanding. What we *write* remains on record for all time. If we write simply and clearly there is less danger of misinterpretation than in the spoken word. The written word is the only way that a scientist or clinician can reach a large audience.

A reader has written to us asking for a copy of an article that appeared in this journal more than 25 years ago. He has been using the technique over the years that was described in the article and now wishes to refine the procedure. The article was written by his late brother.

I recall the prompting and the urging that I gave the brother at the time to write the article. He had the usual excuses: "I am not a writer;" "nobody will be interested in this technique;" "I am too busy."

A writer for a professional publication is unlike an author who writes for a magazine of general circulation. The former makes a contribution to knowledge and receives no monetary award. The latter is paid for his effort and his writing is usually soon

(*Continued on page* 284)

CLINICAL AND LABORATORY SUGGESTIONS

(See pages 270 and 271)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.

$10 will be paid on publication for each suggestion that is used.

"as dead as yesterday's newspaper."

Every dentist has an obligation to advance the science and art of his profession. That is part of the tradition. He should publish anything he has of interest or value in some dental journal.

Prone and Supine

One of the nightmares of editors is to be casual and inexact with words. It is their job to keep meanings straight and clear. Their task should not be to confuse—but sometimes we do.

I have had such bad dreams and one of them has recently come to fact. In an article that described a hospital procedure in which a dentist performs an operation under general anesthesia we allowed this statement to appear: "With the patient in a prone position a standard mouth prop is inserted and the throat is packed to prevent aspiration of debris." A feat of gymnastics indeed!

In this business we have learned that readers often show more intelligence in reading than do editors. When such stupid errors appear in print we know that we will receive letters. And we should get brickbats!

The letters that come to us on these occasions of humiliation are usually more courteous than we deserve. They are seldom violent; never unfriendly. We appreciate receiving them and offer no alibis to protect our ego. There is, in fact, no excuse to offer.

A typical letter is this one that we received from William Silverstein: D.D.S., of Johnstown, Pennsylvania: "Dear Editor: In the March issue of DENTAL DIGEST in an article on administering general anesthesia it is stated that 'with the patient in a prone position a standard mouth prop is inserted.' It seems to me that the procedure would be difficult enough with the patient in a supine position, but lying face down would make it virtually impossible. Or am I just old fashioned?"

Our reply to Doctor Silverstein: "Dear Doctor Silverstein: The inexcusable error has happened that I have dreaded for a long time. For

(*Continued on page* 288)